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PUBLIC HEALTH AND INSURANCE:

AMERICAN ADDRESSES

BY

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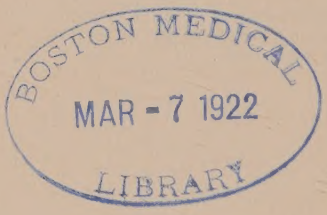

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TO THE

RIGHT HONOURABLE JOHN BURNS

A LEADER IN PUBLIC HEALTH;

WHO IN PARTICULAR MADE THE PUBLIC REALISE THE
IMPORTANCE OF CONCENTRATING ON THE

MOTHER AND HER CHILD

PREFACE

After more than three decades of work in preventive medicine and public health, the opportunity has arisen in connection with a year's visit to America, to take a panoramic view of public health in England, of the progress which has been secured, of the factors which have impeded progress, and of the pressing desiderata for more efficient future action.

During my stay in America I have had the privilege of addressing public audiences in every part, from New Orleans to Toronto, and from New York and Boston to San Francisco and Seattle; as well as more special audiences at Johns Hopkins University, at Saranac and at Harvard, California, Washington, and Yale Universities; and at the request of many friends some of the addresses given to these audiences are now published in volume form. These addresses briefly outline some of the lessons of long experience, and although the conditions under which they were delivered rendered complete exposition impracticable, there are, I think, advantages in not overloading the presentation for public consideration of a many-sided subject.

It will be noted that the same problem may be men-

tioned in several addresses, though usually from a different angle. The entire avoidance of repetition would have necessitated the abandonment of the lecture form, and would, I believe, have diminished the utility of the volume. The table of contents and index render cross-reference easy.

Those wishing to ascertain fuller details on most of the problems discussed in the present volume may refer, I think with advantage, to my annual reports as Medical Officer of the Local Government Board, England, and to my four special reports on Maternal and Child Mortality, which also were issued as English Government publications.

British experience is only partially applicable in the United States, the almost complete Home Rule in each State creating a new and interesting problem in efficient national public health administration. Nevertheless a review of events in Great Britain cannot fail to be useful in America, which is faced with similar problems. The main lines of public health administration in Great Britain have proved their value by their success. There has been local independence with a minimum of central control, and the people's representatives in every area have been made to realize their commercial responsibility. The mistakes made in permitting the multiplication of small and inefficient public health authorities, in allowing official medical

work to be divided respectively between different local and central authorities, in sanctioning the creation of *ad hoc* authorities for special work, in associating state medicine with monetary insurance against sickness, and in not securing that insurance shall directly assist the prevention of sickness, have been largely the mistakes of politicians and of central authorities. These mistakes involve the retracing of steps and the undoing of the mischief resulting from ill-advised action. In view of these conflicting events, the marvellous achievements secured by public health authorities are the more noteworthy.

In every American city visited by me I have been struck with the earnest desire of voluntary and official public health and social workers to profit by English experience, to adopt what is good, to secure the abolition of the short tenure of office of competent officers under the present political system, and to introduce civil service conditions for them. There is in many respects a close parallelism between the course of public health on both sides of the Atlantic; in some cities the English hygienist has much to learn in respect of advanced and original work; and in other American cities in which "political pull" continues, there is evidence of the development of a wider interest and a more general sense of communal responsibility; a deeper trend of thought which will make for steadily

increasing efficiency in public health work. As this volume discusses public health problems especially from a social viewpoint, it is my earnest hope that it may be useful in this direction.

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CHAPTER I

Public Health Progress in England During the Last Fifty Years[1]

After thirty-five years in active public health work in England—during eleven of those years having been the principal officer of its central public health department on its medical side—I may be assumed to possess some qualification for the task of reviewing the past half century's progress in public health in England.

Parallelism of Events in New and Old England

I find it, however, beyond my power to compass in a short address a resumé of my subject which shall be complete, or completely in perspective, or which shall not omit features on which, had time permitted, one would have wished to comment; and I must ask you to remember that only a portion—and that chiefly non-administrative[2]—of the history of this wonderful half century can be embraced within the present address. The survey should, I think, take a panoramic view of the story as it has developed, should note the

[1] An address prepared for the celebration of the fiftieth anniversary of the Massachusetts Board of Health, September, 1919.

[2] The administrative side of the subject is sketched in the next chapter.

changes as they have occurred, the obstacles which impeded reforms as well as the reforms secured; and should also, at least incidentally, state—in the light of unfailing historical guidance, as well as of increasing knowledge—the pressing desiderata for more efficient and more rapid future progress. I cannot hope to accomplish this task except to a fragmentary extent, but I am happy to remember that sanitary history in Old and in New England has proceeded largely on parallel lines. The curves of annual death-rates from all causes, from typhoid fever, from tuberculosis, and of the mortality of infants show the closeness of the parallelism of the public health history of England and Massachusetts.

The work of the last fifty years was built on preceding pioneer work of men in Old and in New England; and for a complete understanding of this work, a momentary glance is required at the men of this earlier generation and their work.

In the old country we speak with reverence of the names of Southwood Smith, Kay, Chadwick, Farr and Simon; and you remember with gratitude the names of Lemuel Shattuck, of Bowditch, of Walcott, S. W. Abbott, and Theobald Smith; and it is gratifying to remember that the epoch-making report of the Massachusetts Sanitary Commission of 1850—to which were attached the ever memorable names of Shattuck, N. P. Banks, and Jehiel Abbott—among its many statesman-

like and far-seeing proposals, recommended a sanitary survey of the State, and referred to the recent English sanitary surveys, with which British sanitation may be said to have begun.

The Utilisation of Lay Workers

Let me in passing comment on the fact that neither Lemuel Shattuck in Boston nor Edwin Chadwick in London was a physician; but a perusal of their writings shows that they were men of sound judgment, of earnest zeal for their fellow men, with a wide and statesmanlike outlook, ready to search out, to accept and to apply the medical knowledge on which necessarily the prevention of disease is based. They illustrate once for all the need for partnership between all well-wishers of humanity in this work, and the importance of combined effort by the sociologist and the physician, as well as of experts in each branch of sanitation, if all attainable success is to be attained.

The tradition then established has never been lost. In England, more perhaps than in America, the control of public health work has been shared by intelligent laymen on local and central authorities, and the fact that medical officers of health have found it necessary to convince these lay representatives of the general public of the need for the reforms recommended, has led to steady progress, seldom interrupted by relapses. And this is true, although delays and disappoint-

ments have beset the path of the earnest reformer, who might well wish that his lay colleagues had been trained in schools in which natural science formed a more open avenue to distinction than classics; or that the representatives on local authorities might more fully and more quickly appreciate in Simon's words, what they are

> sometimes a little apt to forget that, for sanitary purposes, they are also the appointed guardians of human beings whose lives are at stake in the business.

What were the ideals with which the Fathers of Sanitation in New and in Old England began their work?

They cannot be better expressed than in their own words. In the 1850 Report of the Massachusetts Sanitary Commission they are thus expressed:

> We believe that the conditions of perfect health, either public or personal, are seldom or never attained, though attainable; that the average length of human life may be very much extended, and its physical power greatly augmented; that in every year, within this Commonwealth, thousands of lives are lost which might have been saved; that tens of thousands of cases of sickness occur, which might have been prevented; that a vast amount of unnecessarily impaired health, and physical debility, exists among those not actually confined by sickness; that these preventible evils require an enormous expenditure and loss of money, and impose upon the people unnumbered and immeasurable calamities, pecuniary, social, physical, mental, and moral, which might be avoided; that means exist, within our reach, for their mitigation or removal; and that measures for prevention will effect infinitely more than remedies for the cure of disease.

In a succeeding paragraph the Commissioners proceed to quote with approval, the following remarks made by Mr. (afterwards Sir John) Simon in the preceding year, when he was medical officer of health to the City of London, and before he became the principal medical officer and adviser of the British Government in health matters, and in that capacity laid the foundation and built much of the edifice of our present health organization.

> Ignorant men may sneer at the pretensions of sanitary science; weak and timorous men may hesitate to commit themselves to its principles, so large is their application; selfish men may shrink from the labour of change, which its recognition must entail; and wicked men may turn indifferently from considering that which concerns the health and happiness of millions of their fellow-creatures; but in the great objects which it proposes to itself, in the immense amelioration which it proffers to the physical, social, and, indirectly, to the moral conditions of an immense majority of our fellow creatures, it transcends the importance of all other sciences; and, in its beneficent operation, seems to embody the spirit, and to fulfil the intentions, of practical Christianity.

With such noble ideals, what measure of success crowned their efforts and those of their successors?

The earlier history I can only briefly mention, as we are chiefly concerned today with events since 1869. To understand these events, however, one must understand the forces which had been accumulating and increasing in power in earlier years, and which rendered possible the rapid public health progress expe-

rienced in the fourth quarter of the nineteenth and the first quarter—so far as it has passed—of the twentieth century.

Laissez Faire Economic Teaching

Historians in future generations will refer to the second half of the eighteenth and the first half of the nineteenth century as the period of unmitigated industrialism, of associated rapid increase of urban at the expense of rural life, and of the most extreme manifestation of *laissez faire* economic science. The older semi-paternal system of interference with the economic life of the people by King and Parliament, was replaced, under the influence of Adam Smith, Malthus, James Mill, and other teachers, by inaction based on the view that in old countries poverty is the natural and inevitable result of pressure of population on means of subsistence, and that any interference with freedom of competition in obtaining work or employing workers is useless or mischievous. A similar view found expression in President Jefferson's dictum: that government is best which governs least; and until the middle of the nineteenth century these views were generally accepted and their influence was dominant.

It was assumed that given free competition, enlightened self-interest would incite effort and improvement, encourage self-reliance, and guarantee production and economy.

Under the conditions considered inevitable with such teaching, although great wealth accompanied the rapid industrial development after the Napoleonic wars, it was associated with unrelieved misery; for home-workers and rural workers crowded into mean hovels in towns, paying exorbitant rents out of a miserable pittance of wages, and were exposed to the evils resulting from overcrowding, and from absence of adequate and satisfactory water supply, scavenging or drainage. By the year 1851 about half the population of England and Wales had become aggregated in towns; and it may be added that in 1911, less than one fourth of the population was left in rural districts. Urbanization in the earlier years meant dense overcrowding and insanitation; and that it is still an influence adverse to health may be gathered from the information given by the census of 1911, that over eight times as large a proportion of the urban as of the rural population live in one-roomed tenements, and nearly twice as large a proportion live in two-roomed tenements, while the proportion of one-roomed tenements in towns which are overcrowded (in the sense of having more than two persons to a room) in towns is seven times as great, and of two-roomed tenements is twice as great as in country districts.

Domestic misery was associated with commensurate industrial misery; overwork, in insanitary factories and workshops, regardless of the health of the "hands," was the rule.

The displacement between 1760 and 1800 of domestic by factory manufacture represented a new phenomenon in the world's history, a true industrial revolution. It was the parting of the ages; destined not only to change the life of the people of England from preponderantly outdoor to preponderantly indoor; and to bring for them for many years all the disadvantages of unregulated town life; but also, owing to the rapid development of better roads, of canals, and then of railroads and steamships to end forever the practical segregation in which countries, and even neighbouring communities, had previously lived.

It cannot be wondered at that under these circumstances the general death-rate was excessive, and epidemic disease spread with a rapidity and to an extent previously unknown.

The reaction against the *laissez faire* economic teaching began early, and it is in accordance with the fitness of things that the national conscience first rebelled. The earliest evidence of reform was legislation in 1802 on behalf of pauper children indentured to the overseers in textile factories; and there followed subsequent Factory and other Acts in 1819, in 1833, in 1844 and in 1847, which prohibited the factory employment of children under nine, limited the hours of labour of young persons and of women, and insisted on elementary sanitation in factories. Subsequent

Factory and Mining Acts, followed by Shop Hours Acts and the Shop Seats' Act, have completed a most valuable code of regulations prohibiting overwork, and securing a measure of protection against dangers to health and limb or eyesight during industrial employment. It is noteworthy that the first steps at improved sanitation, and to safeguard health by preventing overwork, were on the industrial plane. Factory inspectors preceded medical officers of health and sanitary inspectors appointed by local authorities.

Philanthropy was the motive power in initiating factory reform; in securing general sanitary reform, driving power was furnished by the double motive of economy and fear, caused by the inordinate expense of poor-law administration, the frequently recurring epidemics of "fever," and the alarming occasional invasions of Asiatic cholera. The sacrifices of life from cholera were truly vicarious; for we owe it largely to these that our national system of vital statistics was initiated in 1837 and that serious efforts at sanitary reform were begun.

Man and His Environment

The history of these earlier steps is full of interest; but I cannot outline it today. There can be no doubt that as Simon[8] put it, referring to Dr. Southwood Smith's report to the Poor-Law Commissioners in

[8] Reprint of Reports, Vol. I, p. 448.

1838 ("on Some of the Physical Causes of Sickness and Mortality to which the Poor are particularly exposed, and which are capable of removal by Sanitary Regulations")

the commencement of State interference on behalf of the health of the labouring classes may be said to date from its publication and to have been in a very important degree determined by its facts and arguments.

That the first principles of causation were beginning to be appreciated is shown in the following extract from Queen Victoria's speech in opening Parliament in 1849. In this speech she referred to the ravages of cholera which it had pleased Almighty God to arrest, and added:

Her Majesty is persuaded that we shall best evince our gratitude by vigilant precautions against the more obvious causes of sickness, and an enlightened consideration for those who are most exposed to its attacks.

Note that these words and the early attempts at public health legislation, culminating in our great sanitary code, the Public Health Act, 1875, incorporated the tripod on which enlightened public health administration must always be supported, viz.,

(1) attack on the causes of sickness,
(2) satisfactory treatment of the sick, and
(3) satisfactory care for the poor.

I might properly add

(4) attack on the causes of poverty,

for it is perhaps the chief merit of the great work of Edwin Chadwick that, in the light of reports on local surveys made by Kay, Southwood Smith, and others, he was convinced and was able to convince Parliament that a very large share of the total destitution then existing was due to the conditions under which the people lived, and the disease generated in these conditions.

It is commonly stated that, in the past, public health administration has concerned itself solely with mankind's environment, failing to recognise the predominant importance of man himself as a transmitter of disease, and of his personal well-being and protection as the point to which energy should be directed. This cannot be said to have been the intention of the legislature or of the earlier reformers; though unhappily this limited view received official acceptance, in large measure owing to the increasing incompatibility between poor-law and public health administration and the spreading over from poor-law to public health administration of the general influence of "deterrence" as a motive of administration. As time went on, this principle came to be realised as contrary to the general interest in anything which concerns the health of the community.

Dirt and Disease

The crude generalization emerging from the earlier surveys was the close relation between filth conditions and excessive sickness; and the motive behind these

inquiries was the desire to remove one of the chief causes of destitution.

So late as 1874 Simon said "filth is the deadliest of our present removable causes of disease"; and throughout the whole series of his vividly worded and influential reports, the same fundamentally important teaching was urged.

Chadwick's earlier reports were similarly influenced by the teaching of Dr. Southwood Smith and his collaborators, to the effect that epidemic diseases as a whole are the direct consequence of local insanitary conditions. This generalization, as we now know, needs a modified and more accurate statement, specialized for each individual disease. In its original form, however, it embodied a realisation of the immense importance of the environment to make or to mar individual and national life; it secured the beginning of our national sanitary improvements, and it laid the foundations of the house of health which as nations we are still building.

The three diseases which were especially regarded as due to filth were cholera, typhus, and enteric fever; and the history of public health in England is largely concerned with these three diseases.

Cholera

The general view then held in New as in Old England is well stated in the following extract from the

Report of the Massachusetts Sanitary Commission, 1850:

> Atmospheric contagion is generally harmless unless attracted by local causes . . . that terrible disease, Asiatic Cholera, derives its terrific power chiefly or entirely from the accessory or accompanying circumstances which attend it. It bounds over habitation after habitation where cleanliness abides; . . . while it alights near some congenial abode of filth or impurity. . . . Wherever there is a dirty street, court, or dwelling-house, the elements of pestilence are at work in that neighbourhood.

And the important moral is drawn that

> the person who permits his neighbour's atmosphere to be contaminated by any filth . . . is worse than a highway robber. The latter robs us of property, the former of life.

Similarly, Simon in England was teaching that "in order to the prevention of Filth Diseases, the prevention of filth is indispensable"; and that there was need for local authorities "to introduce for the first time, as into savage life, the rudiments of sanitary civilization."

The crude generalization that filth causes disease perhaps persisted too long, and the value of Snow's investigation in 1855 of the outbreak of Cholera in the area of supply of the Broad Street pump was perhaps too slowly appreciated. The influence of Von Pettenkofer's theories on the relation between subsoil conditions and Cholera was largely responsible for this delay; but already in 1856 Simon had accepted

the importance of water infection, giving as his general conclusion that

> under the specific influence which determines an epidemic period, fecalised drinking water and fecalised air equally may breed and convey the poison (of Cholera).

Still it will be noted there persisted the notion of aerial convection of the contagia of cholera and enteric fever, in addition to their convection by dirt, by flies, or the more common contamination of hands or feet or food by faecal matter; but the importance of water supplies was beginning to be appreciated. Already in 1883 local authorities in England and Wales had outstanding loans for waterworks amounting to twenty-nine million and for sewerage amounting to fifteen million pounds sterling, while between 1883 and 1912 they expended out of rates and by means of loans one hundred and thirty-one millions for waterworks and eighty-nine millions sterling for sewerage.

Although we realise now the greater importance of control of excreta from persons specifically infected, we must agree with Simon that communally

> Nowhere out of Laputa could there be serious thought of differentiating excremental performances into groups of diarrhoeal and healthy. . . . It is excrement, indiscriminately, that must be kept from fouling us with its decay. . . . It is to be hoped that . . . for a population to be thus poisoned by its own excrement, will some day be deemed ignominious and intolerable.

And it is still opportune to draw attention to the ter-

rible responsibility incurred by local authorities when they distribute a general supply of water to the inhabitants of their area without taking every possible precaution against contamination. The conveniences and advantages of public water supplies "are countervailed by dangers to life on a scale of gigantic magnitude"; and sanitary history, in the calamitous experience of Lincoln, Maidstone, and Worthing and of Lowell and other towns and districts, has given remarkable illustrations of the need for eternal vigilance.

Typhoid Fever

With the differentiation of typhoid fever from typhus fever by Gerhard in Philadelphia in 1837, and by Stewart and W. Jenner in Great Britain in 1849, it became possible to associate the former with excremental, the latter with respiratory filth, "the non-removal of the volatile refuse of the human body." The question still remained whether typhoid fever was producible by "emanations from decomposing organic matter," whether it was "often generated spontaneously by faecal fermentation," as contended by Murchison, who in 1858 proposed the name "pythogenic fever" for typhoid fever; or whether as indicated by the remarkable observations of William Budd of Bristol, the introduction of specific infection from a typhoid patient was needed to start a local outbreak. Gradually it became clear that specific contamination

was necessary to start an outbreak or even to cause a single case of this disease, and between 1870 and 1880 a number of water-borne outbreaks were traced. It also gradually became evident that, however objectionable or even noxious might be the gaseous emanations from leaky drains or sewers, they did not cause typhoid fever or diphtheria. Hence the statement, for instance, of Oliver Wendell Holmes in 1862 (quoted for its historical interest by Dr. Sedgwick) that "the bills of mortality are more obviously affected by drainage than by this or that method of practice," which expressed universal opinion when it was written, is now known to be accurate only when specific matter from drains contaminates milk or water supplies, or causes infection by actual contact.

With the general recognition of the causal relation between impure water supplies and typhoid fever came the rapid provision of public supplies, on which, as already seen, large public expenditure was incurred; and to this fact is owing, in the main, the rapid reduction in typhoid mortality shown in the following statement:

Year	Population of England and Wales in Millions	No. of Deaths from Typhoid Fever
1871	22⅘	12,709
1881	26	6,688
1891	29	5,200
1901	32⅗	5,172
1911	36⅕	2,430
1917	33⅗ (civilian)	977

The number of cases notified in England and Wales

in 1911 was 13,852
in 1917 was 4,601

There was, it will be noted, a period of apparent cessation of decline in the typhoid mortality between 1891 and 1901, followed by a striking decline between 1901 and the present time. The late decline was due in large measure to the discovery of the relation between contaminated shell-fish and enteric fever, and, probably to a less extent, to the realisation of the importance of the small minority of cases of this disease, who continue after their recovery to spread infection. At the present time typhoid fever promises to become as rare in England as typhus fever or malaria; and with increased care in the protection of food, as well as of water supplies, and with the universal hospital treatment of the sick and observation of their bacterial condition on discharge, this anticipation bids fair to be realised.

Typhus Fever

The history of typhus is similar to that of typhoid fever; and when Murchison in 1858 asserted its spontaneous generation under conditions of overcrowding and bad ventilation—

> Its great predisposing cause is destitution; while the exciting cause or specific poison is generated by overcrowding of human beings with deficient ventilation—

he was expressing the considered conclusion of his period.

Typhus Fever was not differentiated from enteric fever in the Registrar-General's returns prior to 1869, but the course of events in later periods can be seen in the following statement:

Years	Typhus Fever, No. of Deaths in England and Wales
Ten years, 1871–80	13,975
Eight years, 1903–10	210
Seven years, 1911–17	42

The cases in recent years were nearly all traceable to imported infection.

The main factors in the reduction of typhus fever have been the immobilisation of infectious cases in fever hospitals, the rigid cleansing and disinfection of invaded households, and the surveillance of persons who have been exposed to infection. The clearing of insanitary courts, housing improvements, and the associated increased cleanliness of the general population have doubtless aided; and it is a suggestive fact that although the virus of typhus is not yet determined, and although it has only recently been shown that typhus is a louse-spread disease, the point of extinction of the disease under peace conditions has almost been reached in countries having an efficient sanitary organization and a cleanly people.

With the demonstration that typhoid fever was com-

monly water-borne, that the spread of typhus fever could be controlled by sanitary surveillance and immobilisation of infectious cases in hospital, and that diarrhoeal mortality could be reduced by increased municipal and domestic cleanliness, much more rapid improvement in national health occurred in the decennium 1871–1880 and in subsequent years.

The course of events for typhoid and typhus fever has already been noted. Before describing further the action taken by central and local public health authorities and the other influences conducing to reform, it is convenient to summarise at this point the

General Results in the Saving of Life

Although I do not dwell further on the influence of increase of wages, of better and cheaper food, of sanitary education of the people, of a steadily increasing standard of cleanliness,—in person and in spitting habits,—and of improving home conditions, it will not be assumed they must be omitted in any considered judgment as to the means by which the saving of life shown by the following figures has been secured.

The expectation of life at birth (or mean after-lifetime) in England and Wales in 1871–80 for males was 41.4 years, for females 41.9 years. It steadily improved decade by decade; based on the experience of 1910–12 the male expectation of life had been prolonged by 10.1 years, and the female by 10.8 years. A

very large proportion of the lives saved were lived in the years of greatest value to the community. Comparing 1910–12 with 1871–80, the reduction of the death-rate meant that *each year* 116,401 male and 118,554 female lives were saved, and the future lifetime of these persons whose lives were prolonged,—assuming a continuance of current experience,—would give an annual gain of nearly ten millions of additional years of life, of which over seventy per cent. would be lived at ages 15 to 65.

Of the annual saving of 234,955 lives, 64 per cent. was ascribable to reduced mortality from acute and chronic infectious diseases; and of the mortality under these headings nearly one-third was referable to respiratory diseases, the same amount to tuberculosis, one-seventh to scarlet fever, one-thirteenth to measles and whooping cough, the same amount to typhus and enteric fever, and one-sixteenth to diarrhoeal diseases.

The gain of life may be further illustrated by the following figures. During the 32 years, 1881 to 1912, over seventeen millions deaths occurred in England and Wales. Had the experience of 1871–80 continued throughout the subsequent years, the number of deaths would have been increased by close on four millions.

Specific Causation of Disease

The preceding review will have made it clear that in the period of earlier slow sanitary reform, although

much invaluable work was being done, it was in some measure a groping in the dark, a continuous search for further light while pursuing (or at least advocating in season and out of season) such cleansing and purification of man's surroundings as were evidently needed, and such segregation of the infectious sick as could be secured in the absence of complete information of the cases of sickness. Happily in the case of Small Pox there was an additional effective protection in vaccination.

With Pasteur's discoveries was inaugurated a new era in sanitation; the general microbial origin of infectious diseases, inferred from his discoveries, leading to the conclusion that the chief source of disease to others is man himself, and that his surroundings in the main cause disease insofar only as they become a vehicle for conveying disease by direct inhalation of infected dirt (Sax. *drit* = excrement), or by swallowing specifically infected foods.

The importance of the sanitary engineer in securing pure water supplies and satisfactory sewerage continues. The sanitary inspector's work in removing nuisances and accumulations, any one of which might be specifically contaminated,[4] and in controlling overcrowding and uncleanliness as well as in other respects,

[4] There is still no evidence to show that in the production of the excessive diarrhoea which prevails in insanitary districts, specific contamination of the filth accumulations is necessary.

remains indispensable. But the brunt of guidance in the exact prevention of disease, especially of communicable diseases, must necessarily now fall on

the epidemiologist,
the vital statistician, and
the laboratory worker.

Present Limitations of Epidemiology

The epidemiologist must always remain the chief of these three, suggesting and arranging the details appropriate to each investigation, putting together the facts supplied by the two other workers and drawing legitimate conclusions. In conducting his inquiries and in searching for further light on obscure points, he will need to remember Simon's remarks (Eighth Report of the Privy Council):

> In the category of time, far out of human reach, there are circumstances which greatly influence contagion. . . . These almost cosmic arisings are spreadings of disease or facts of cosmo-chemical disturbance which no mere contagionism can explain.

These words had special reference to cholera, and although we still know little or nothing of the mysterious influences which permit cholera when unimpeded to undertake transmundane travels at irregular intervals of time, we can claim with certainty that in any country in which sanitary surveillance is well organised, and the internal sanitation of the country is good,

the spread of cholera need not be feared. Thanks to the great discovery of Jenner and to the complete organization of measures for isolation of the sick, and for vaccination and surveillance of contacts, we can make the same claim for smallpox, whenever this mysterious disease begins its occasional world travels.

But we have to confess our continuing relative helplessness in preventing the spread of measles, and of acute catarrhs, among our endemic infections, and still more of influenza when—as recently—it makes its devastating swoop on the entire world, and secures a larger number of victims than the World War itself.

We can recommend isolation of the sick, and personal precautions in speaking and in coughing and sneezing, and occasionally may score an isolated success; but we are practically helpless against this enemy. Nor are we better acquainted with the means for preventing the spread of poliomyelitis; and we cannot claim that any measure against the spread of cerebro-spinal fever has had undoubted success, except only rapid amelioration of the conditions of overcrowding under which it especially occurs. These instances suffice to show that in the region of respiratory infections,—with the one notable exception of tuberculosis, which we can control, whenever we are ready to take the necessary complete measures—we have much to learn. In respect of most diseases due to respiratory infection we are groping in darkness nearly as dense as that which

beset Chadwick, Farr and Simon in their earlier work, and with little hope of any campaign comparable with that against dirt *en masse,* which was largely effective in reducing the specific infections of cholera, dysentery, and enteric fever, of typhus fever and even of tuberculosis.

The great public health requirements for the future are the conquest over acute respiratory infections, including not only affections of the lungs, but probably also measles and whooping cough, cerebro-spinal fever and poliomyelitis and their allies; and the prevention of cancer. So while thankful for the discoveries already made, and for the beneficent work already accomplished, we must hope that the rapid increase of Medical Research in England and here will in due time enable us to extend the application of preventive medicine to diseases so far uncontrollable.

The Importance of Vital Statistics

In England public health progress has been largely actuated by records of mortality, which have served to make the public realise the need for expenditure of money on sanitary reform. Experience has shown, as Dr. J. S. Fulton has expressed it, that

> every wheel that turns in the service of public health must be belted to the shaft of vital statistics.

Accurate and complete returns of deaths and their causes are essential in investigating the local and occu-

pational incidence of disease, and in comparing the experience of different communities: and the various weekly, quarterly, annual, and decennial reports issued from the Registrar-General's Department have rendered invaluable service to the cause of public health. "Ye shall know the truth, and the truth shall make you free."

It was not the least of Chadwick's services to the State that he discovered William Farr, who was intrusted with the compilation of, and comment on, our early statistics from 1837 onwards. His reports, with those of Simon, embody the history of sanitary progress in England and the motives and arguments which actuated it.

The registration of births similarly enabled comparison of birth-rates to be made; also of maternal mortality in child-bearing and of infant mortality in different areas, and at different parts of the first year of life; and these studies made by medical officers of health and more exhaustively in the Medical Department of the Local Government Board have had great influence in determining the intensive work for improving the conditions of childbearing and of infant rearing, which in recent years has been accomplished.

As time went on it became clear that registration of deaths gave a very imperfect view of the prevalence of disease, and that so far as infectious diseases were concerned, valuable time was lost when preventive

action could only be taken after the patient's death. Death registration told of the total wrecks which had occurred during the storm; it gave no information as to early mishaps, enabling others to trim their vessels and thus weather through. It gave a list of killed in battle, not of the wounded also.

And so began gradually, in characteristic British fashion, the notification of infectious cases, the list of notifiable diseases being extended from time to time.

From 1911 onwards the Local Government Board prepared a weekly statement of infectious cases notified in each sanitary area which was distributed to every medical officer of health. Similar returns of exotic diseases of interest to port medical officers were distributed; and the successive annual summaries prepared in the Medical Department of the Local Government Board showing the incidence of the chief epidemic diseases in every area now constitute one of the most valuable epidemiological records extant.

Collaterally with the notification of infectious diseases, including tuberculosis, to the medical officer of health, occurred the enforcement of notification of various industrial diseases occurring in factories, such as anthrax, lead and arsenic poisoning, to the Chief Inspector of Factories, Home Office.

Conditions of Medical Practice Bearing on Public Health

It cannot be claimed that notification of acute infectious diseases, still less of tuberculosis, has been complete. It is impossible to discuss the reasons for this in the present address (see Lecture IX); but the present conditions of medical practice are largely responsible for the partial lack of success. Hasty conditions of work, failure to employ laboratory means of diagnosis, or to utilise available consultation facilities (especially in tuberculosis), and lack of training of medical practitioners in preventive medicine, are among the obstacles to further control of disease.

There will not be complete success until means are discovered for training and enlisting every medical practitioner as a medical officer of health in the circle of his private or public practice, and of securing his services not only in the early and prompt detection of disease, but also in the systematic supervision during health of the families under his care, and in advising them as to habits or methods of life which are inimical to health.

Poor Law v. Public Health

An approximation to this ideal was in the minds of the early sanitary reformers; and it was one of the misfortunes associated with the deterrent policy of poor-law administration in medical relief, that separa-

tion between Poor Law and Public Health appeared to offer the best prospect of sanitary progress.

Had Simon's advice been followed, when the Local Government Board was about to take over the public health duties of the Privy Council, the poor-law organization might, and probably would gradually, have been permeated by public health activities, and thus the sanitary welfare of the poorest class of the community would have been more completely safeguarded on its personal as well as on its environmental side.

In his Eleventh Report to the Privy Council (1868) Simon recommended adherence to the intention of Mr. Lowe's Nuisance Bill of 1860, which would have identified the health and destitution authorities. He deprecated the institution of "a differently planned organization for objects exclusively of health"; subject to the conditions that public health should not be subordinate to poor-law work and that there should be power to combine districts for certain purposes, and action through committees in sub-areas.

Had this course been pursued, and had the central public health policy not been preponderantly non-medical and poor-law in sentiment and tradition, more rapid progress in public health would have been experienced. The central evil was intensified, as is shown in Simon's *Public Health Institutions,* by regarding the medical officer of the Local Government Board as merely advisory, and by the retention and extension

on a large scale of local inspection by lay officers of the Central Board, for conditions which needed systematic medical control.

The problem of the proper relation between destitution and public health and between the authorities dealing with these, runs right through our past history of social progress, and it is not even yet satisfactorily adjusted.

The gradually increasing dissatisfaction with Poor Law administration led to the appointment of a Royal Commission which after several years deliberation, in 1909 presented a Majority and a Minority Report.

The dissatisfaction, which these reports justified, may be said to have been inherent in the situation; for the Poor Law organization was constantly attempting,—more or less under the influence of the principle of "deterrence,"—two incompatible tasks: to prevent undue dependence upon parochial assistance and to give to those needing them the medical and nursing assistance which the principles of preventive medicine require should be given unstintingly, and completely freed from any deterrent element. Although in many parochial areas admirable medical work was done, this was the exception, not the rule; and public sentiment rebelled against the giving or the receiving of medical assistance to which was attached the "poor-law stigma." Both reports recommended the scrapping of the poor-law machinery by abolishing the present Boards of

Guardians and the general mixed workhouse; and the Minority Report went further, proposing to complete the supersession of the poor-law by various preventive authorities, which were already partially in operation. Thus everything connected with the treatment of the sick would be transferred to the Public Health Authorities, the care of school children to Education Authorities, of lunacy and the feeble-minded to already existing Asylum Committees, and so on.

Behind these proposals lay the principle that *the treatment and the prevention of disease cannot administratively be separated without injuring the possibilities of success of both;* and this is a principle which happily is becoming more generally accepted.

Before the report of the Poor Law Commission was issued, examples of the application of this axiom existed in the isolation and treatment of patients with acute infectious diseases; in the increasing provision for the treatment of tuberculosis; in the extension of provision for care of parturient women and for their infants; and in the system of school medical inspection followed to some extent by treatment.

It is convenient to add here, that under each of these headings, great extensions have been made since 1911; and an even more spectacular public provision of treatment, as the best method of preventing further extension of disease, is exemplified in the gratuitous and confidential diagnosis by laboratory assistance and

the treatment of venereal diseases now given in every large town in the country, the Central Government paying three fourths and the Local Authority one fourth of its cost. In order further to secure the success of this treatment,—which is provided for all comers with no residential or financial conditions,—the legislature has passed an enactment forbidding the advertisement or offering for sale of any remedy for these diseases, and forbidding their treatment except by qualified medical practitioners.

It is one of the great misfortunes of more recent Public Health administration that the Report of the Royal Commission on the Poor Laws has not hitherto been made the subject of legislation. It would not have been an insuperable task to find a common measure of agreement between the Majority and the Minority Reports. Indeed an adjustment has recently been made between these two reports, as the result of the deliberations of a House of Commons Committee, over which Sir Donald Maclean presided; and it may be hoped that ere long this will mean the realisation of a much belated reform of local administration.

This forms an indispensable step in the needed further struggle against the problems of Destitution. So much of destitution is due to sickness that the separation of the two problems is inconsistent with success. "One-third of all the paupers are sick, one-third chil-

dren, and one-quarter either widows encumbered by young families or certified lunatics." There are economic causes of poverty, apart from sickness, but it is essential to remember that every disease which is controlled frees the community not only from a measurable amount of sickness, but from the amount of poverty implied by this sickness.

Had the policy of transfer of the duties of Poor Law authorities to the Councils of Counties and County Boroughs recommended in 1909 by the Poor Law Commission been adopted, these last named authorities would already possess a medical service for the poor employing some 4,000 doctors; they would be in possession of the large infirmaries and other medical institutions of the poor law, and given reforms and readjustments of these which are urgently required, and combination of the hospital arrangements of poor-law and public health, would have a greatly improved medical service freed from poor-law shackles and capable of gradual extension as needs and policy indicate. The fusion of these two services with the school medical service would have been an easy further step; and England would by this time have built up a National Medical Service, for the very poor, for all purposes of public health—including poor-law—administration, and for children and their mothers in special circumstances.

Insurance v. Public Health

Political circumstances, into which it is unnecessary to enter, led to the adoption of a course, which medically ran directly athwart the course of needed reform. The National (Health) Insurance Act, 1911, was passed, giving sickness and invalidity benefits to those employed persons below a certain income who could contribute a weekly sum, which was considerably less than half the estimated cost of the benefits to be received; and an additional medical service, further complicating the already existing medical services of the poor law, public health, and educational authorities, was set up.

The establishment of national insurance against sickness and disablement in the United Kingdom exemplifies the contagiousness, under modern conditions of life, of a new course adopted in any country; and Bismarck's attempt to counteract socialism by insurance has been responsible for international, state and official experimentation in insurance which has not generally been well advised, and which is associated in England with extravagant cost of administration.

Insurance against sickness is a praiseworthy and valuable provision against future contingencies; and on its non-medical side free from drawbacks. Neither on its medical nor on its non-medical side, however, is it an alternative to prevention of disease; and the National Insurance Act in England must be held in the

main to have delayed the public health reform which would have been secured had equal effort been devoted to it, and the money lavished on insurance given in the form of central public health grants conditional on the active coöperation of local authorities. True, the English public have been educated to think in regard to sickness in millions when previous provisions for the treatment and prevention of sickness had been thought of in thousands of pounds; and there has been an extension of provision for the institutional treatment of tuberculosis, which probably has been more rapid than would otherwise have been made, in the absence of the alternative grants named above. It should be added that, owing to the natural insistence of insured tuberculous patients on treatment in a sanatorum, and to the desire of Local Insurance Committees and their officers to satisfy insured persons, sanatoria have often been filled with unsuitable patients, sent there regardless of relative social and public health needs. The Maternity Benefit (of a sum of money on the birth of an infant to the wife of an insured person or to an employed woman) similarly is given unconditionally, and should be replaced or supplemented by the provision of service needed at this time (doctor or mid-wife, nurse, domestic assistance), which would ensure the welfare of both mother and infant.

Apart from other reforms the transfer of medical provision, of provision for tuberculous patients, and

for parturient women to public health authorities is urgently needed; and the service should be given according to need irrespective of insurance. The valuable fund for medical research has already been placed under the Privy Council.

The absurdity of regarding insurance as anything beyond a possibly useful handmaiden and auxiliary to Public Health, when strict administrative arrangements are made for this purpose, may be illustrated by the question as to what would have been the result in sanitary progress if Chadwick or Simon had persuaded the government of their day to insure a favoured section of the public against the risk of typhus or smallpox or tuberculosis or even of non-infectious illness?

Under the National Insurance Act medical domiciliary assistance,—but only to the extent which is within the competence of a medical practitioner of average ability,—is provided under contract for one-third of the total population; and evidently this implies an immense abstraction from ordinary private medical practice. There is no provision, hitherto, for consultant and expert facilities when required (except for tuberculosis), for the nursing of patients, or for institutional treatment of any disease, except tuberculosis; and no funds are generally available for these purposes except such as belong to the community at large.

In view of the preceding facts and of other consid-

erations which I have not mentioned, reconstruction of the English Insurance scheme is obviously required. The scheme cannot persist in its present form. The already accomplished amalgamation of the Local Government Board and National Insurance Commission, should make radical changes easier; an equally important step would be the transfer of the medical functions of the Local Insurance Committees to Public Health Authorities. The creation of these independent committees was one of the greatest blunders of the National Insurance Act, which was conceived ill-advisedly, had too short a gestation, and suffered a premature and forced delivery; and we may hope that ere long, it may be replaced entirely, on its medical and hygienic side, by a rapid extension of the medical activities of the public health service which will conduce to the welfare of the whole nation.

It is impossible to justify the continuance of state subsidisation of benefits for a favoured portion of the wage-earning classes, when poorer persons who do not come within the category of employed persons or who fall out of employment, and when clerks and others on limited salaries who are unable to provide adequately for sickness, are left unprovided for.

A National Medical Service

What is most urgently needed is a national medical service which will give for all who cannot afford them

hospital treatment and the services of consultants and of scientific aids to diagnosis and treatment whenever required; and which will provide nurses during illness treated at home, when this is asked for by the doctor in attendance.

Outside the operation of the National Insurance Act, these services have been provided to a steadily increasing extent, but in a characteristically British fashion. They have grown largely under voluntary management, and as exemplifications of Christian philanthropy; though official has rapidly overtaken the voluntary provision of hospitals and nursing, the two working side by side, each in their respective spheres, and on the whole with cordial coöperation. The extent to which institutional treatment with its more satisfactory arrangements is replacing the domiciliary treatment of disease may be gathered from the following striking facts:

In England and Wales

Of deaths from all causes, in 1881 = 1 in every 9

Of deaths from all causes, in 1910 = 1 in every 5

In London

Of deaths from all causes, in 1881 = 1 in every 5

Of deaths from all causes, in 1910 = 2 in every 5

occurred in public institutions.

The facts as to Pulmonary Tuberculosis are even more significant:

In the year 1911

in England and Wales 34% of male 22% of female
and in London 59% of male and 48% of female

deaths from pulmonary tuberculosis occurred in public institutions; and as each of these patients spent on an average several months in hospital, at the most infectious stage of their illness, a material annual reduction in the possibility of massive infection of relatives and others has been secured.

Hospitals Important Housing Auxiliaries

This institutional treatment of the sick has been one of the chief influences counteracting the pernicious effects of industrialism and urbanization. It has relieved housing difficulties at a time when insufficient bedroom accommodation is most injurious; and it has secured year by year for a steadily increasing proportion of the total population the improvements of modern surgery and medicine as practised in institutions, which permit of the poor thus treated receiving more satisfactory and more hopeful treatment than is obtainable for a large proportion of other classes of society.

My address is already too long. Other opportunities will be taken of explaining the rapidly increasing part which the State and Public Health Authorities are taking in the hygiene and care of motherhood and childhood and of school children; in the provision of additional nursing services for the sick, in the

rapid growth in numbers of public health nurses, health visitors, school nurses, etc.; in special schemes for the treatment of tuberculosis and of venereal diseases; and the circumstances under which the Central Government are to a rapidly increasing extent paying half (or in certain instances three-fourths) of approved local expenditure on the provision of hygienic, nursing and medical services; and I do not therefore dwell on these points further.

Nor need I comment here on the remarkable fact that the British Government under present circumstances have departed from the economic position that houses built by local authorities must be able to be let at a rental covering all outgoings.

In Lecture II I shall deal with problems of local and central government, and with the training and appointment of medical officers of health; but the present review, if it omitted from consideration on the one hand the value of specially trained whole-time health officers, and on the other hand the health significance of the general advance in the standard of medical treatment, as factors of prime importance in securing the already achieved improvement in human life and health, would give a most imperfect picture of the actual facts.

The need to avoid Complacency

Such figures as I have given, showing saving and prolongation of life during the last fifty years, are apt, if left uncorrected, to create a complacent warmth tending to public health inertia. It may conduce further to this folding of the hands when I state that Simon in his first report to the Local Government Board expressed the opinion that the half million deaths a year approximately which occurred in 1871 in England and Wales were a third (125,000) more numerous than they would be if existing knowledge of the chief causes of disease were reasonably well applied throughout the country; and further that had the mortality experience during 1911–15 held good for 1871, the deaths in that year would have been reduced by 200,000 instead of by 125,000, the ideal then aimed at by Simon.

But with increased knowledge we know that a larger proportion of diseases are preventable than was formerly supposed. It will be easy within the next ten years to reduce the death-rate by one-third of its present amount, given systematic and adequate action on the part of Public Health Authorities and an effective educational propaganda among the general public. More important still, an even larger proportion of mankind's total illness can be avoided, and life on a higher plane of health secured, as well as life prolonged to its normal limit. The work carried out

during the last ten years, sanitary, medical and hygienic, in improving the prospects of healthy childbearing and of normal infancy and childhood constitute the most important advance toward national physiological life on a higher plane which has hitherto been made.

Preventive medicine can never be satisfied until it has approached Isaiah's ideal (Isaiah, LXV, 20), "There shall be no more thence an infant of days, nor an old man that hath not filled his days; for the child shall die a hundred years old."

CHAPTER II

The Historical Development of Public Health Policy in England[1]

The subject is too large to be treated adequately in the course of an evening's address; and to bring it within manageable compass it is necessary for me to select my material rigidly and, as far as I can, to present this material in such a manner as will bring into relief its salient and most instructive features.

The evolution of public health in England proceeded by experimental steps, some mistaken and then retraced, others mistaken and not retraced, but steps oftenest in the direction of a complete service, which is the goal of our work.

The evolution has been a gradual growth arising out of realized needs, rather than a logical development based on general principles; and as politicians and legislators seldom take a wide outlook, or consider a specific proposal in relation to what is already being done, and to what is the desired goal, the English experience is especially instructive.

[1] An Address at the Forty-seventh Annual Meeting of the American Public Health Association, New Orleans, October 27, 1919.

Town-living and Health Problems

Public health work became an urgent necessity when men began to huddle in towns; and with the industrial revolution of the eighteenth and early nineteenth centuries the need for remedial action became acute. It is hard to realize that in the days of our grandfathers, the home was in most instances the unit of industry; and that in the eighteenth century communications between districts and towns were not more advanced than those of the ancient Egyptians. When, however, vast urban aggregations of population multiplied, travelling facilities rapidly increased, and the results of crowding, of contaminated water supplies, of intensive and widespread infection, were seen in devastating endemic and epidemic diseases. Poverty, squalor, dirt, and their consequences, were rampant in the towns, where underpaid work-people were exploited by masters, whose self-centred outlook had some share of justification in the political economy doctrines of the time, which regarded any interference with "freedom of contract" as useless or even pernicious.

What is public health work? It is best defined by stating its object, which is to secure the maximum attainable health of every member of the community, so far as this can be secured by the authorities, local, state, or federal, concerned in any part of government, acting in coöperation with all voluntary agencies whose

work conduces to the same end. The connotation of public health becomes wider year by year. It embraces physiological as well as pathological life; being as much concerned with improving the standard of health of each person as with the prevention and cure of disease. Hence the importance of the "concentration on the mother and her child" (John Burns), to secure for them by all practicable means the conditions of complete health, which during the last twelve years has been a vital part of our public health work, and which is now being made to include not only all hygienic and medical help that may be needed, but also such domestic aid as may enable the mother to bring her children into the world and to rear them under advantageous conditions.

Scope of Constructive Health Work

Public health embraces some eugenic elements, and may comprise more when eugenists have accumulated adequate non-fallacious evidence on which to base valid conclusions. Already partial steps are being taken to secure the segregation and prevent the propagation of the feeble-minded and the insane; and in sorting out congenital infection from true heredity action is being taken to avoid congenital syphilis and to prevent the large number of still-births due to this race poison.

Public health in the main is concerned primarily

with the environmental measures calculated to prevent the attack of man by disease, whether pre-natal or post-natal. These measures may be industrial, as in the prevention of accidents, of dust, of noxious vapours; or sanitary, as in the control of water supplies, food, or milk, and in the removal of organic filth; or may be the application of preventive medicine against infectious and non-infectious diseases; or therapeutic, consisting of the prompt and adequate treatment of all illnesses and the curtailment of the incompetence due to them; or educational, consisting, first in importance, in the training of medical practitioners, of public health officials, and nurses; and, next, in the education of the general public and especially of the children in our schools, in the science and practice of public health.

Advances in public health in many directions can only be secured by continued and extended medical research, and public health, therefore, has a direct and immediate interest in promoting and subsidizing such research.

These being the objects of public health, how far have we travelled toward securing the end in view? I do not propose to myself the pleasant task of showing to what extent the general death-rate has been lowered, infant and child mortality greatly reduced, the duration of life extended, how typhus and smallpox have been almost eradicated, typhoid fever made

a disappearing disease, and tuberculosis has become the cause of only half its former death rate. When inclined to indulge in such pleasant considerations, I recall the statement I have made elsewhere that one-half of the mortality and disablement still occurring at ages below seventy can be obviated by the application of medical knowledge already within our possession.

Let me attempt the more difficult task of outlining the history of forms of administrative control of disease since 1834.

Reform in the Control of Poverty

Poverty and disease work in a vicious circle in which cause and effect often change places; but it is certain that disease is one of the most fertile causes of poverty, using the word poverty in the sense of privation of one or other essential of physical well being.

For this reason, and because the half starved form a constant social danger, poor-law administration long antedated public health administration. There is not time to follow the course of earlier poor-law administration, with its many and grievous abuses. The Poor-Law Amendment Act of 1834, gave the Central Government control over the systems of local relief, secured the combination of parishes into unions for poor-law relief,[2] and forbade outdoor relief to able-

[2] The importance of this is seen in the fact that there are in England and Wales 14,614 parishes, and only 646 unions for the relief of the poor.

bodied men. The creation of an organ of central control has led to the subsequent course of aid to paupers being determined in the main in London, action of poor-law guardians being subject to supervision by government inspectors, and to endorsement by the Central Authority. At first, medical assistance under the reformed Poor Law was made as deterrent as non-medical relief; and although there has been much improvement, chiefly on the institutional side, medical treatment under the Poor Law has to some extent retained this deterrent element, and it has, except in the poor-law infirmaries of large cities, remained generally disliked by the people concerned.

The first Central Poor-Law Authority was a Commission having no representative in Parliament. In 1847 it was replaced by a Board, the president of which was a member of Parliament and of the Government. Here once for all Parliament declared its intention to maintain direct control of central official government, and in this and in all other departments has done so. If democracy is to be real,—and we have no sound, practicable alternative to it,—evidently the representatives of the people must be masters of the administration; and English policy has never wavered on this point. After many years' experience of public life in England, I have no hesitation in saying that this principle is sound; that it insures progress which, although slow, is less liable to relapse than administration under

autonomous expert commissions, whether centrally or locally; and that any lack of progress that has been experienced in central government has been as much the result of inactivity and of lack of sympathy with social reform on the part of the permanent officials of government departments who have had access to their parliamentary chief, as of the inertia of politicians or their obstruction to reform.

Dissatisfaction with Poor-Law administration has steadily increased in the years since 1834, as the problem of the able-bodied pauper has diminished and the Poor Law has been concerned more and more with the sick and infirm, the aged, and children. These at the present time form some 98 per cent. of the total population relieved. The fundamental principles of the Poor Law were rightly attacked. It did not comprise elements tending to build up disabled families, or to prevent families from falling hopelessly and permanently into destitution. The law was administered almost entirely with a view to *relief;* practically not at all as a *curative* agency. In medical language, symptomatic and not rational causal treatment was the rule.

In medical relief, poor-law administration has been a constant struggle between increasingly humane treatment and the conception that the pauper's position must remain inferior to that of the non-pauper; an important principle when applied to the able-bodied

adult who has drifted into willing dependence; mischievous when applied to sick persons, and to dependent women and children.

The general dissatisfaction with poor-law administration led to the appointment of a Royal Commission on the Poor-Laws which, after several years' deliberation, published in 1909 a majority and a minority report. Both these reports recommended the abolition of boards of guardians, and the transfer of their duties to the 144 largest public health authorities in the country (County Councils, 44; and the Councils of county boroughs, 82), and the abolition of the general workhouse. The majority report would have continued the Poor-Law Guardians as a Committee of the new Authority; the minority report proposed to distribute the duties of the guardians to different committees of the Public Health Authority; thus medical treatment to the Public Health Committee; the care of lunacy and the feebleminded to the Asylum Committee; care of children to the Education Committee; vagrants, etc., to the Police Committee; a special committee concerning itself with all questions of monetary assistance.

A compromise between these two schemes has recently been arranged, and when the new Ministry of Health, which will combine public health, poor-law, insurance, and educational medical work in one department, has found time to do urgently needed work, the above indicated reform may be hoped for, along

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with the even more urgently needed reform of local public health administration, and the abolition of a large number of the smaller and less efficient sanitary authorities. With these reforms will come much needed de-centralization of poor-law work. Good work in all respects cannot be secured if the Central Authority concerns itself, as at present, in minutiae of local administration, and has no time to devote itself to the larger problems, and to the task of bringing indifferent, chiefly smaller authorities, up to the standard of efficient local authorities. A large portion of the expense of local poor-law administration is borne by the central exchequer, and this money if properly applied will give the necessary leverage for reform, while leaving progressive Authorities, and especially the Authorities of large towns, free to experiment and advance.

Reform in Industry

The industrial revolution meant the subjection of large masses of working class families to evil conditions of housing and work in crowded and insanitary dwellings and factories. The public conscience first rebelled in regard to boarded out and apprentised pauper children; and the first Factory Act in 1802 concerned itself with them; and with this Act emerged the germ of machinery for securing compliance with the law, magistrates and clergymen being appointed as inspectors under the Act.

The Act was largely futile; but it meant the beginning of the gradual breaking down of *laissez faire* doctrines; and there followed a more widely operative Factory Act in 1833, restricting hours of labor of children, and initiating professional inspectors controlled and paid by the Government. In 1842 the underground employment of women in mines was forbidden; and at intervals since then numerous factory and allied acts have been passed, restricting the duration and conditions of work of women and children, improving rules as to sanitation, insuring systematic inspection by government inspectors, and constituting a far reaching system of supervision and control.

The inspectors, on whom falls the burden of ensuring compliance with the Factory Laws and regulations made under them, are controlled by the department of the central government known as the Home Office; their work on the whole has been well done, and the conditions of factory and workshop life have greatly improved. Some portion of the sanitary supervision of these work-places falls on the local Sanitary Authority; but in the main the system is one of absolutely centralized government control. This secures almost complete absence of improper influence of interested local persons, whether masters or workmen; but it is arguable that this system should be replaced by a localized system, the inspectors being officers of the 144

larger authorities. These local officers could be placed in direct touch with the Home Office or the Ministry of Health and with the central staff of inspectors having expert knowledge in the different branches of industrial work.

Public Health Reform

Public health reform was a direct consequence of the Poor-Law Amendment Act, 1834. Anxious to diminish the enormous expense of the existing Poor Law, and realizing that a large share of this sickness was due to fever and other illnesses, surveys and inquiries were set on foot by the commissioners administering this Act, and the reports which followed revealed a state of things urgently calling for sanitary reform, in the interest of national economy as well as of health. "An Act for Promoting the Public Health" was passed in August, 1848, which created a General Board of Health consisting of four members and a secretary. These Commissioners, among whom was Edwin Chadwick, former Secretary of the Poor Law Board, initiated a system of procedure which was largely on the lines of poor-law action, and which involved constant pin-pricking by the Central Authority of the grossly indifferent local authorities. The commissioners were more zealous than discreet; and after six years they were no longer tolerated. At that time centralization was as much a bogie as socialism has become in more recent years. Parliament and the lo-

calities represented by its members doubtless feared the reforming activity of Chadwick and his colleagues, though they sheltered themselves behind their exaggerated fears of bureaucracy and centralization.

A new board replaced the old, parliamentary in character, its president being a member of the Government. This repeated, so far as concerns Parliamentary headship, the story of the Poor-Law Board, and established once more the theory of the administrative control of the representatives of the people. Nor, although the change meant for the time serious slackening in sanitary reform, can objection be taken to it. In a democratic government the elected representatives of the people must take first place; and it is the rôle of officials to educate them in the direction of needed reforms. Reforms which do not carry public opinion with them are not likely to be permanently successful; and, whether in administration or in legislation, attempts to sidetrack or ignore this fact are not likely to be permanently effective.

Public Health Reforms

When the Local Government Board was formed in 1870, a second opportunity was lost of developing Public Health Administration on lines which we now know to be the best adapted for a complete service of preventive medicine. The first lost opportunity was when sanitary authorities, completely separate from

poor-law authorities, were created for administering the sanitary laws. Probably this arose from Chadwick's despair of getting effective sanitary reform from poor-law guardians; but the creation of separate authorities was scarcely consistent with the fact recognized by him that pauperism is largely, if not predominantly a question of sickness; or with the less recognized fact that its treatment forms an essential part of prevention. It was recognized that the care of the sick was largely idle until the unnecessary causes of disease had been cut off, but not that the adequate treatment of sickness is an important means of preventing it or of curtailing it. Rumsey,[3] in 1856, stated the unrealized possibilities of the poor-law medical officer's domiciliary attendance on paupers in the following words:

> There are much higher functions of a preventive nature than those of a mere "public informer" which the district medical officer ought to perform. He should become the sanitary adviser of the poor in their dwellings . . . he (should) be in a peculiar sense, the missionary of health in his own parish or district,—instructing the working classes in personal and domestic hygiene,—and practically proving to the helpless and debased, the disheartened and disaffected, that the State cares for them, a fact of which, until of late, they have seen but little evidence.

In the result the *ad hoc* poor-law authority did not absorb into it the newly created municipal and urban

[3] Rumsey: Essays in State Medicine, 1856, pp. 190, 277, 282.

and rural sanitary administration, but continued on its separate path.

Simon, in 1868, had urged the inadvisability of continuing *ad hoc* authorities, and had urged that, at least, sanitary should be made coterminous in area of administration with poor-law districts. His advice was not adopted, and there followed years in which sanitary authorities were allowed to subdivide areas, until the total number became 1,807 instead of 635, the number of poor-law authorities; and in which they concerned themselves chiefly with nuisances and water supplies and with inadequate provision for the prevention and treatment of infectious diseases. With the creation of county councils and the more complete autonomy of the councils of county boroughs, the large centres of population developed and improved their sanitary administration more rapidly; and it became practicable to undertake every division of sanitary work on an efficient scale. Although much remains to be done, it can be claimed that in our larger towns, containing more than half of the total population of the country, the public health work in nearly all its branches is of a high order. It would have been still more efficient had the poor-law guardians been merged in the Town Council, and had the relationship between the school medical service and the other branches of the public health service been closer than has been the case.

What is now needed is that the defects just named

should be made good; that more complete autonomy should be given to the authorities which come up to a required standard, and that especially they should have greater freedom in developing local possibilities of improved administration. Central grants in aid of local sanitary administration are steadily increasing. Already the Government pays one-half of local expenditure on a large program of maternity and child welfare work, one-half of the expense of local tuberculosis work, and three-fourths of the expense of local work for the diagnosis and treatment of venereal diseases, and for propaganda work concerning these. These grants should be the means of greatly increasing good local administration; but if,—this is improbable,—they curtail local experimentation and extension, and bring local public health administration into anything approaching the subservience of local poor-law administration, the value of these subventions will be doubtful.

Education Authorities and Health

The national system of compulsory elementary education inaugurated in 1870 has had valuable indirect influence in promoting the public health. Apart from the beneficent effect of education, the steadily increasing pressure on children to come to school in a cleanly condition and the stimulus of emulation in tidiness and cleanliness, have done much to improve the home con-

ditions of the people. After the South African war much attention was drawn to the large number of recruits rejected owing to physical disabilities; and an inter-departmental committee reported *inter alia* in favour of a system of medical inspection of pupils in elementary schools, which had often been urged by hygienists. Observations made in Glasgow and Edinburgh by Leslie Mackenzie did much to draw attention to the physical defects in Scottish school children. In 1907 the Board of Education acquired power to make provision through the local education authorities for the medical inspection and treatment of school children. At first little more than inspection of pupils was undertaken, a large number of defects of sight, hearing, parasitic conditions, as well as malnutrition and actual disease being discovered. Gradually some items of treatment were undertaken at school clinics, or at hospitals or centres subsidized by the education authorities; though the amount of treatment is still small compared to the defects discovered and not otherwise treated.

But there now existed in every locality three authorities concerned in the treatment of disease:

1. Poor-law guardians, treating all forms of illness in paupers, at home and in institutions.

2. Public health authorities, undertaking preventive measures against disease, and treating fevers, tuberculosis, and occasionally other diseases in institutions;

and more recently providing nurses at home for certain conditions.

3. Local education authorities, concerned in treating certain ailments in school children.

Centrally two government departments were supervising this work, and subsidizing it to some extent from government funds; and poor-law medical work and public health medical work were supervised by two divisions of the Local Government Board acting in almost complete isolation. More recently Parliament has permitted the Board of Education to give grants in aid of schools for mothers, and allied institutions for the care of children under school age; for which institutions, substantially, the Local Government Board in other instances was giving grants.

The separation of the medical work of Education Authorities from public health medical work was contrary to the first principles of sound administration; although it is possible that, owing to the inertia in some public health circles, this separation at first favored rapid advance in school hygiene; just as the early development of public health apart from poor-law administration was probably more rapid than could have been expected from centrally ridden local authorities, concerned chiefly in keeping down the poor rates.

The Ad Hoc Vice

But in both instances there was an offence against the first principles of good administration, which require that when a special function is to be undertaken it shall be undertaken by one governing body for the whole community needing the service, and not for different sections of the community by several governing bodies. Medical treatment is needed for school children and for the poor generally. Why separate this into two administrations? Hospitals are required for paupers with tuberculosis, and for non-paupers with tuberculosis. Why have two authorities for this work? The separate existence of Education and Poor-Law Authorities *qûa* medical attendance on those children needing it erred, not only in this fundamental respect, but also because neither of these authorities had the preventive facilities and powers possessed by Public Health Authorities, who were also partially engaged in the treatment of disease.

The inveterate tendency in the past has been to create a new authority when any new work was inaugurated, this authority then fulfilling all purposes for a special portion of the community and thus necessarily duplicating the staffs of other departments of local or central government. The crowning instance of this recurring instance of legislative myopia is seen in the case of the National Insurance Act, under which has been provided an imperfect and unsatisfactory

domiciliary medical service for one-third of the entire population of Great Britain, when by combining and extending the medical forces of existing departments of the state, a satisfactory service for all needing it would have been secured. The axiom that "the object of community service is to do away with group competitions and bring in its place group coöperation or team work" (Goodnow), is especially applicable to all public health and medical work; and the spirit of this axiom is infringed by the existence of separate, sometimes competing, occasionally conflicting, services under separate local and central control.

Principles of Local Government

The preceding considerations bear on the perennial problem of efficient government, local and central. There are three functions to be performed in government, legislation, determination of administrative policy and extent of work, and the actual executive work. In England, legislation is in the hands of Parliament and is usually national in scope. Large cities, however, not infrequently obtain special legislative power to meet local needs; and by this means have succeeded in advancing local efficiency above the average standard. Local authorities, furthermore, have the power to make regulations and by-laws for special purposes, subject to the approval of the Central Authority.

In settling the details of local administration, the

elected representatives of the public are supreme. They meet in Council, and action is taken on a majority vote. The councils of counties and cities, and even of smaller municipal boroughs divide themselves into committees, each consisting of about a dozen members, elected by vote of the whole Council. The chairman or mayor of the Council has no special power, except that he may give a casting vote.

The chief defect in local sanitary administration in England is the continued existence of a large number of small and relatively inefficient local authorities. The larger authorities, as a rule, do their work well, and politics enter but little into elections. Official posts are not vacated with changing councils. These councils are approximating to the ideal of a complete local Parliament dealing with all governmental concerns, and to the further ideal that each unit of government should be large enough to minimize the influence of local interested motives, and to undertake each department of municipal work on a considerable scale. The local Parliament has committees concerned with police, finance, public health, education; and when the urgently needed poor-law reforms are made, and when the Education Committee hands over its medical work to the Public Health Committee, the ideal will become a fact.

Power is already given to coopt on to some of these committees a few persons who are not members of

the Council, from among men or women having special knowledge of the Committee's work; and the exercise of this power has been found to be useful.

But in each committee it is the direct representatives of the public who decide points of policy and settle the main outlines of administration. There is growing up a tendency to appoint local advisory committees, consisting of special groups representing professional or trade interests. Thus a medical committee may be consulted on medical proposals, and so on. This is still in the experimental stage. It will probably prove permanently useful, as voicing the occupational aspect of any proposed work of the municipality; but it will need to be kept to its strictly consultative limitations, and the responsibility of the Council as representing the combined wisdom or unwisdom of the entire community must be maintained.

All substitutes for government of the people by the representatives of the whole population are open to objection. They do not contain within them the elements of permanence. If there is a corrupt council, the remedy is not its supersession by an independent executive. Such an executive is the abrogation of popular government. "Good and efficient government is possible under almost any form of organization. More depends upon men than devices. . . . But . . . if we believe that the functions of deliberation or determination of municipal policy and of adminis-

tration or the execution or carrying out of that policy should be kept distinct, we cannot avoid the conclusion that a city council is a necessary part of the municipal organization."[4]

Each committee of the local Council is advised by the County Clerk or Town Clerk on legal and administrative matters; and the medical officer of health and other expert officers, like the legal adviser, in nearly every instance, hold office during good behaviour. Under the above arrangements the elected members and the officials are kept in touch with each other. The latter's recommendations and actual work must be approved by the former; and this works well under the system of determination of policy by committees, subject to confirmation and control by the entire Council. The motive power is public opinion. Good work cannot for any prolonged period go beyond what the public demand, and the work of officials is one of constant education of their masters and of the public.

The Training and Tenure of Office of Health Officers

Every sanitary district is required to appoint a medical officer of health and since 1888 every medical officer of health for a district with a population exceeding 50,000 must have a special diploma in public health. The enforcement of this requirement has

[4] Goodnow: Municipal Problems, p. 226.

done much to raise the standard of work of these officers. It is significant, furthermore, that while in 1873 the percentage of the total population of England and Wales having whole-time medical officers of health was only 20.6, it had increased to 61.4 per cent. in 1911. In the metropolis, in the whole of Scotland, in every English county (forty-four) and in many other districts these officers possess security of tenure, in the sense that they cannot be removed from office without the consent of the Central Government, which usually pays half their salaries. Even without this safeguard, removal from office by the local authority is rare; but there has been long delay in securing the further reform that in all areas the medical officer of health should be able to perform his difficult and sometimes obnoxious duties without fear of removal from office, or of reduction in his emolument, except as the result of deliberate action on appeal to a central authority.

When pensions can be earned by medical officers of health and by all medical men on the public health staff, their position will become more attractive for men of good standing; and this reform has become more important in view of the steadily increasing complexity of the medical work now undertaken in a large public health department. It will include *inter alia* the following officers and activities: superintendent medical officers of health; district medical officers of

health; tuberculosis officers; medical officers of maternity and child welfare centres, of venereal disease centres; fever hospitals, and tuberculosis sanatoriums and hospitals.

The development of a graduated public health medical service in which each physician employed will be able to develop his own special abilities, will be easier when to the above list is added the work of district (late Poor-Law) medical officers; medical practitioners attending insured persons and such other persons as are treated at the expense of the State; treatment centres for special conditions of the ear, eye, throat; gynecological and other special departments; hospital treatment for general diseases.

That there will be development in these directions when the tangle caused by the National Insurance Act of 1911 has been unravelled, there can be no doubt.

I have in Lecture IV expressed my opinion as to the additional tangle introduced into the central and local government of the United Kingdom by the National Insurance Act of 1911.

The failure of the British Government to act on the recommendations of the Poor-Law Commission of 1909 was a serious misfortune to public health. Sickness is the cause of a predominant part of our total destitution, and to allow the continued separation of administrative action respecting these two problems is inconsistent with a full measure of success. Political

circumstances, however, led to the adoption of a course which, medically, ran directly athwart the course of needed reform.

The National Insurance Act and Public Health

The National Insurance Act was passed, placing one-third of the total population (all employed manual workers and other employed workers with an income below £160, since increased to £250) under an obligation to pay 4d weekly (women 3d), 3d being contributed for each person by the employer and 2d by the State. In return each worker receives a money payment weekly during disability from illness, attendance by a doctor, sanatorium treatment for tuberculosis, and a maternity benefit on the birth of a child to his wife (30 shillings), or, if the wife also is industrially employed, an additional 30 shillings. The medical benefit is limited to such domiciliary attendance as a medical practitioner of average ability can furnish. It continues the old popular conception of private medical practice, and allows the public to remain obsessed with the notion that satisfactory medical care consists in a "visit and a bottle." No provision is made for pathological aids to diagnosis, beyond what is already provided by public health authorities. No nurses are available for serious cases; the insured person is not entitled to surgical operations, when needed, except of the simplest character. With few exceptions, no ap-

pliances are provided; the treatment of special diseases of the eye, ear, nose and teeth is commonly excluded. No hospital provision whatever, except for tuberculosis, is made.

The contract system of medical practice has been accompanied by a serious amount of lax certification of sickness. The sanatorium benefit is unnecessary, as soon as the duty of public authorities to provide treatment for tuberculosis is declared obligatory. It is already very largely provided. The maternity benefit is entirely unconditional; there is no guarantee that it is devoted to the welfare of the mother and infant. It needs to be supplemented or replaced by the arrangements for providing nurses, doctors, midwives, and domestic assistance which are in process of development by public health authorities. In short, there is no justification for providing medical services, preponderantly at the expense of the state (contributions by employers are a form of taxation), which are limited to a favored portion of the total population, and which do not benefit all in need of these services.

Provision for Sickness

The principle of monetary insurance against sickness and disability is thoroughly sound. It forms a praiseworthy and valuable provision against future contingencies. Insurance, however, is not synonymous with prevention as is too often suggested. In

England insurance has been an actual impediment to public health work, though it might have gradually become a useful auxiliary to it if otherwise organized, and especially if the creation of independent insurance committees representing interests to a preponderant extent had been avoided. But any medical service needed for purposes of insurance should not form part of the insurance system. Medical aid is needed for a large section of the population who are unable to afford deductions from their wages, or who have no wages. It is needed for wives and children as much as for the industrially employed head of the household; and it is needed for many others who are excluded from the scope of the National Insurance Act. Only when the medical is separated from the insurance service, and when the medical practitioner, as far as practicable, is made independent of the patient who desires too facile a sick-certificate, will good medical work and sound sickness insurance be secured.

General Summary

The preceding review of the history of public health in England is necessarily fragmentary. It does not include, for instance, a discussion of the relationship of the medical profession to public health authorities. On this I content myself with repeating my oft stated opinion that until every medical practitioner is trained to investigate each case of illness from a preventive

as well as from what is often rather a pharmaceutical than a really curative standpoint, until a communal system of consultant and hospital services independent of any insurance system is made available for all needing it, and until every medical practitioner is related by financial and official ties to this communal system, full control over disease,—to the extent of our present available medical knowledge,—will not be secured.

The communal system will include not only the provision of domiciliary nurses for all needing them, but also a greatly increased staff of public health nurses engaged in educational supervision in connection with the work of the communal services and of each individual practitioner. Such a system will repay the community manifold in improved health and in a higher standard of happiness and well being.

If objection is taken to such wide sweeping proposals, let me remind you that free communal services of sanitation and education are already provided; and that the care of personal health is of equal importance with these. All will agree that a large proportion of the population cannot afford to pay individually for medical attendance and nursing under present conditions, still less for the consultant and hospital services which advances in medical service have rendered indispensable. There is always present in our midst a large mass of illness which might have been avoided

or curtailed, had there been an organized system of state medicine.

Lest there should be alarm as to the possible consequences of the coöperative provision on such a scale of this primary need of humanity, let me also remind you that coöperative medical aid differs from financial aid in an essential particular. It does not create a demand for further aid, but is always engaged in diminishing this demand. Dependency on financial assistance is liable to continue indefinitely; much wants more. This result of medical aid is almost inconceivable. The Reverend Doctor Chalmers, of Glasgow, said early in the last century: "Ostensible provision for the relief of poverty creates more poverty. An ostensible provision for the relief of disease does not create more disease."

Doctor Chalmers was opposed to the giving of any domiciliary assistance from rates or taxes, and he organized his parish so that every needy person was adequately helped out of charitable funds. But he advocated extended hospital and other medical assistance for the poor; and until this is done, apart altogether from any system of insurance, and as a complete measure on the lines of our educational system, we cannot say that all that is practicable has been done to secure the physical well being of our fellow citizens.

CHAPTER III

The Increasing Socialization of Medicine[1]

Medicine has always been the most altruistic of learned professions; and can proudly claim that its practitioners have ever been ready to give gratuitous assistance to all in need of it. Even more than when Burton wrote his Anatomy of Melancholy—for then medicine was an art with but limited foundation in science—physicians can be defined as "God's intermediate ministers"; and can rightly assume the proud position which Burton gives them:

> Next, therefore, to God, in all our extremities (*for of the Most High cometh healing,* Eccles. XXXVIII, 2) we must seek to, and rely upon, the Physician, who is the *Manus Dei* (the Hand of God), said Hierophilus, and to whom He hath given knowledge, that he might be glorified in his wondrous works.

Each medical practitioner in his own circle, and to the extent of his medical competence, is a medical officer of health, having more influence in directing and controlling the habits, occupation, the housing, the social customs, the dietary and general mode of life of the families to which he has access, than any other

[1] The Wesley M. Carpenter lecture delivered October 2, 1919, before the New York Academy of Medicine.

person. It must be added that in most instances he has even more influence than the minister of religion in regulating the ethical conduct of his patients, especially as regards alcoholism and sexual vices. In the United States the federal government has relieved the medical profession from their duty of restricting individual alcoholic consumption, and an experiment has been begun which if continued—and I trust nothing will prevent this—must forthwith reduce the income of practising physicians throughout the American continent, and at the same time do more to diminish crime, accidents and sickness and to increase national efficiency than any other single step that could be taken, with one exception. This would consist in the universal raising of the standard of sexual conduct of men to that which they expect from their future wives, thus securing a rapid reduction and early disappearance of gonorrhoea and syphilis, diseases which rank with pneumonia, tuberculosis and cancer as chief among the captains of death and disablement in our midst.

The growing possibilities of improvement in personal and social welfare depend very largely on the extent to which, as I have put it elsewhere, "each practitioner becomes a medical officer of health in the range of his own practice." Even on their present record, if—at least on one side—the Kingdom of God consists in "the union of all who love in the service

of all who suffer," medical men can proudly and yet humbly take their place as essential agents in the daily fulfilment of the daily prayer, "Thy Kingdom come."

It is perhaps desirable to attempt at this stage a definition of the sense in which I employ the term socialization of medicine. In it I would include the rendering available for every member of the community, irrespective of any necessary relation to the ordinary conditions of individual payment, of all the potentialities of preventive and curative medicine. Within the scope of medicine are included the basic sciences of physiology and pathology; and the instruction and training of every child and young person in elementary hygiene, including dietetics, necessarily come also within the range of our subject.

There are still agnostics, usually of exclusively classical and mathematical education, even among men holding official sanitary administrative positions, who doubt the value of the application of medical knowledge to the extent indicated; and it becomes desirable, therefore, briefly to refer to some results already obtained by the application of preventive and curative medicine.

The Past Achievements of Medicine

The increasing span of life is scarcely realized as it should be. Addison's description of the bridge of human life, in his Vision of Mirza, is familiar. Its

seventy to a hundred arches support a bridge which is interrupted by broken arches and hidden pitfalls, set very thick at the entrance of the bridge, thinner towards its middle, but multiplied and laid close together towards its further end. Preventive medicine is gradually repairing the broken arches of earlier life; with the prospect of rapid reduction of tuberculosis, of syphilis and gonorrhoea, the removal of pitfalls and the repair of both earlier and middle arches are ensured, if the knowledge we already possess is applied; and although pneumonia and cancer still erode and render unsafe the arches of middle and later adult life, we have already advanced far towards the ideal of euthanasia in old age.

I may be excused from quoting English figures, as our vital statistics are more accurate and complete than those hitherto available for the United States. Parenthetically, may I say that it is a continual source of astonishment to me that in some American states death statistics, and in many more states birth statistics should still be so dubious in their quality as to cause hesitation in utilizing them. And this in a country which in other respects combines the highest business qualities with an underlying idealism which emerges in important crises!

Between 1871–80 and 1910–12 in England the average expectation of life at birth for males increased from 41.4 to 51.5, for females from 44.6 to 55.4,—an

increase within three or four decades of 10 or 11 years in average duration of life. The annual saving of life shown by these figures means that the persons whose lives *each year* are thus saved in England from premature death, have the prospect of living in the aggregate nearly ten million additional years of life, of which the greater part will be lived during the working period of life.

But perhaps more striking than collective statistics are the illustrations of unnecessary premature mortality with which history and literature in the Georgian and Victorian period supply us. Many such instances will occur to you. William Pitt died at the age of 47, Charles James Fox at 57. The history of the Brontë family, given the clue that tuberculosis was at work, can be seen on the tablet which I have often read in Haworth Church. Each sister and the brother died in steady succession at intervals of two and three years; the only exception being Charlotte, who had lived much away from home, and who died at the age of 39 of unrestrained vomiting, a condition which probably would not have been allowed to kill the expectant mother today. Robert Burns died at the age of 37, Keats at the age of 26. Lord Byron on his thirty-third birthday, only three years before his death, wrote as a man already "in the sere and yellow leaf"

> Along life's road, so dim and dirty,
> I've travelled till I'm three and thirty;

> And what has this life left for me:
> Nothing but my thirty-three.

Did time permit, the claims of preventive medicine might be illustrated in the facts as to the almost complete annihilation of typhus fever in this country and in Great Britain, under the influence of hospital segregation of each case, of supervision of contacts, and of increased national cleanliness; in the rapid reduction of enteric fever brought about by pure water and milk supplies, the avoidance of sewage-contaminated shellfish, the control of carriers among food handlers, and the hospital immobilization of cases; and in the almost complete abolition of smallpox, secured by prompt recognition, notification and isolation of each case, the searching out and vaccination of all contacts, and their continued surveillance. The list of medical triumphs, especially in tropical diseases, might easily be extended. I do not fail to remember that respiratory infections have hitherto proved refractory to preventive measures; and that common catarrh, pneumonia, and still more influenza—as also cerebro-spinal fever and poliomyelitis—constitute territories on which the flag of public health has not yet been firmly placed. Tuberculosis must not be thought of in the same category. It is a controllable disease, so soon as physicians, public health authorities and the patients themselves will combine on an adequate scale to adopt measures already within reach. These measures will be less

costly than the present position of partial inertia; health is always less costly than disease, and, as Dr. Herman Biggs has often reminded us, can be purchased within natural limits, to the extent which we really desire. This is preëminently true for tuberculosis.

Medical triumphs have not been restricted to preventive medicine. Time would fail me to speak of the introduction of general anaesthetics by Morton and Simpson, which has rendered possible the reaping of the full harvest of the work of Pasteur and Lister. Conversely modern surgery has itself abolished more pain than anaesthetics themselves.

The chief triumphs of modern curative medicine and surgery have been rendered practicable by the more accurate study of disease and the more skilled attention for the masses of the population obtainable in hospitals. The steady advance in the provision of skilled nursing has kept pace with medical advance.

Increasing Importance of Hospitals

From a return prepared by the Local Government Board in 1915 it appears that the number of hospital beds in England and Wales (not including lunatic asylums, tuberculosis institutions, or convalescent or nursing homes) was 4.9 per 1,000 of the population. In the United States, according to the Modern Hospital Year Book for 1919, the number of hospital beds

amounts to 6 per 1,000 of the population, or 3.4 per 1,000, excluding beds for mental and nervous cases. It is not certain that the two sets of figures are comparable; but in both instances the distribution of hospital provision is very unequal, and large tracts of each country are left unprovided with available hospital accommodation.

Hospital services have grown in a manner which is characteristic of the Anglo-Saxon: first largely under voluntary management, and as examples of Christian charity; afterwards continued in the same way, but followed by official provision of hospitals on an even larger scale, the two systems working side by side. The extent to which the more satisfactory institutional treatment is replacing the domiciliary treatment of disease may be gathered from the striking facts that in England and Wales one in every nine of the deaths from all causes in 1881 occurred in public institutions, and in 1910, one in every five; while in London the proportion increased from one in five in 1881 to two in five in 1910.

The facts as to pulmonary tuberculosis are even more significant. In the year 1911 in England and Wales 34 per cent. of male and 22 per cent. of female and in London 59 per cent. of male and 48 per cent. of female deaths from pulmonary tuberculosis occurred in public institutions. As each of the patients, who thus had the solace of good nursing and treat-

ment when they were needed most, spent on an average several months in hospitals, at the most infectious stage of their illness, an important annual reduction in the possibility of massive infection of relatives and others has also been secured.

Hospitals as a Partial Solution of Housing Difficulties

We may fairly claim that general and special hospitals have been important agents, not only in reducing the fatality of disease, and in restoring to efficiency more rapidly than in the past a large proportion of the total population; but also in reducing the incidence of tuberculosis, of syphilis, and of other diseases.

The public indebtedness to hospitals has another aspect, too often overlooked. The aggregation during the last hundred years of a steadily increasing proportion of our population in crowded towns has meant the introduction on a gigantic scale of elements inimical to health. Smoke and obscuration of sunlight, dust and noise, the substitution of indoor for outdoor occupations, the difficulties of milk supply for children, and above all inferior housing with associated increased facilities for infection, have combined to render healthy life in towns difficult of attainment. Nor must we omit from the adverse side of the balance sheet the greater loneliness of family life in towns, the diminution in neighbourliness, and the failure of public social opinion to produce the wholesome effect on con-

duct which it exercises in village life. And yet, notwithstanding these factors, urban death-rates and especially tuberculosis death-rates have declined more than rural death-rates, and in parts of some countries urban is even lower than rural mortality.

Why is this? Our hospitals provide the key to the mystery. Parturition is freer from risk in town than in remote country districts; the means for the prevention of infection are better organized, and accident and disease are more promptly and more efficiently treated. The poor in towns receive as a matter of course in hospitals better treatment gratuitously than king or president could command thirty years ago. The relief to housing deficiency given by hospitals comes when most needed, in the emergencies of child-bearing and of sickness; and the net result of this and of better sanitary supervision is that although room-accommodation for families is much more restricted in towns than in country districts, the town-dwellers have a large share of their urban handicap removed by their superiority over country people in medical treatment.

The Continuing Mass of Preventible Disease

The medical record of the past on the side of preventive medicine is one of increasing control over infectious diseases. In securing this result epidemiologists, pathologists, and vital statisticians can rightly claim first place, aided by the sanitary and industrial

inspector and the sanitary engineer; the epidemiologist being dependent largely on the work of the pathologist and of the statistician for guidance in his field investigations, which have led to the discovery and removal of numerous sources and channels of infection.

The record in curative medicine, especially on its surgical side, is one of increasing triumph over serious disease and injury, in which the discovery of anaesthetics and of Listerism have borne an essential part.

None of us can, however, be satisfied with the success already obtained, and I have elsewhere given reasons for concluding that at least one-half of the mortality and disablement still occurring at ages below 70 can be obviated by the application of medical knowledge already in our possession.

The Great War has shown both in Great Britain and in America the extent to which defects and disease exist in would-be recruits to our armies. In the United Kingdom only two-fifths of a large section of recruits could be placed in the first grade; and among American recruits out of two and one-quarter million men measured and examined physically at local boards 29.1 per cent. were rejected on physical grounds; though in the introduction to the Official Bulletin (No. 11, March, 1919) it is pointed out that many of the disabilities have little importance in civil life, and that these considerations possibly "reduce to 15 per cent. the proportion of males 20 to 30 years old who carry

a serious handicap against normal activity in civil occupations."

These figures, whatever doubt may attach to their exact arithmetical value, signify the existence in the community of a large amount of physical disability which must greatly reduce the sum of national efficiency and happiness. The records of our medical examinations of school children bring out the same fact, and emphasize the necessity not only for school clinics on an immensely larger scale than at present, but also for additional medical and nursing care in connection with child-bearing and during the pre-school period, which would discover defects and disease at an earlier stage, and would secure the provision not only of early preventive treatment, but also of more systematic improvement of the sanitary environment of maternity and childhood.

Present Extent of Socialization of Medicine

A mental effort is needed to realize the distance traveled in the public provision of medical assistance in the United Kingdom by the state and by voluntary organizations, including the committees of hospitals, convalescent homes, dispensaries, etc., prior to the passing of the National Insurance Act of 1911. I have already given some illustrative figures regarding hospitals. The *Lancet* some years ago gave a statement of the number of attendances of patients at vol-

untary hospitals in London during the year 1908. Assuming that each out-patient made five attendances, that all in-patients had previously been out-patients and that no patient received a hospital or dispensary letter more than once in the year, it could be inferred that a number equivalent to one in four of the total population of London had received free medical aid in these voluntary institutions during that year. And this did not include the large mass of treatment given gratuitously in poor-law infirmaries, public-health fever and tuberculosis hospitals, and lunatic asylums.

The majority of the medical profession in Great Britain is engaged in either whole-time or part-time service for the state or for local authorities. Of the 24,000 medical practitioners in England and Wales, some 5,000 are engaged as poor-law doctors, some 4,000 or 5,000 in the public-health service, possibly 500 in the lunacy service, some 1,300 in the school medical service, and smaller numbers in various other forms of medical service for the state. This is exclusive of the general practitioners who undertake contract work under the National Insurance Act, and who cannot fall far short of three-fourths of the total membership of the profession. It should be noted that many doctors hold several appointments.

The state has, quite apart from National Insurance, given a rapidly increasing amount of medical assistance to the public.

1. Under the Poor Law, every destitute person is entitled to gratuitous medical attendance, at home or in an institution, and after a fashion has received this during the last century.

2. The institutional treatment of lunacy has grown to an extent which permits the treatment in an asylum of every certified lunatic.

3. The treatment at the expense of the state of feeble-minded persons is rapidly increasing.

4. Public health authorities provide institutional, and to a limited extent domiciliary, treatment of infectious diseases, this treatment being given, as in the preceding cases, in nearly every instance gratuitously.

5. To some extent prior to, and to an increased extent since, the passing of the National Insurance Act, sanatoriums and hospitals for the treatment of tuberculosis are provided by the public health authorities, the central government contributing to the local authority undertaking this duty one-half of all approved expenditure on these institutions, on tuberculosis clinics, and of the expenses incurred in the domiciliary nursing and supervision of tuberculosis patients.

6. Similarly the central government pays one-half of the approved expenditure incurred by local authorities or in certain cases by voluntary agencies in assistance given in aid of maternity and child welfare, e.g., in the provision of midwives, of consultant doctors, of lying-in homes and hospitals, of beds for præpar-

tum treatment, of convalescent homes for mothers or their children, of infant consultations and clinics, etc.

7. In regard to venereal diseases the central government has gone still further. It has made it obligatory on the larger local authorities to provide facilities for pathological diagnosis, and for the treatment of patients suffering from these diseases irrespective of any residential or financial limitations. Arseno-benzol preparations are given gratuitously to medical practitioners, as also laboratory assistance in diagnosis. To ensure the success of the local arrangements the central government pays three-fourths of their total cost; and have passed an act which prohibits the treatment of venereal diseases by any unqualified person, as also the advertisement or sale of any remedies for these diseases.

8. Many public health authorities provide gratuitous assistance to medical practitioners in the bacteriological diagnosis of tuberculosis, enteric fever, diphtheria, etc. Recently Wasserman tests and searches for gonococci and spirochaetes have been added. In 1914 plans for further development, including the provision of complete clinical laboratories for the gratuitous use of practitioners had been planned, and the necessary grant had been obtained from Parliament; but the war led to the plans remaining in abeyance. At the same time government grants in aid of nursing, and of the provision of consultants and referees for

insured patients were passed, but were similarly held in abeyance.

9. The local education authorities provide for the medical inspection of each scholar in elementary day schools several times during the nine years of his compulsory attendance at school. Parents are advised as to treatment needed, in suitable cases are referred to hospitals (payment being made by the education authorities), and for an increasing number of conditions actual treatment is provided at school clinics (teeth, eyes, ringworm, etc.).

The above enumeration, which does not include the recently necessitated activities of the Pensions Department for sailors and soldiers, and those under the National Insurance Act, is not otherwise complete; but it serves to indicate that the state is already committed very deeply to provide for the medical needs of the community. That the work done on behalf of the community, *plus* the work accomplished by private medical practitioners, is not equal to national needs is obvious to any one considering the vast amount of avoidable disease in our midst. Why is this and what is the remedy? A partial answer is given by English experience. The medical provision made in a large proportion of cases is belated and inadequate; and in perhaps a still larger proportion of cases medical advice is not obtained, or being obtained, is not followed. This applies even more to hygienic than to clinical medical advice.

Destitution and Sickness

It was one of the greatest misfortunes in the history of medicine in England that poor law medicine and public health medicine were not administratively combined when the Local Government Board was formed in 1870, and that the preventive ideals of public health were not allowed to operate in the treatment and supervision of the destitute. Although there has been a fairly steady improvement in the conditions of medical treatment under the poor law, its association with the deterrent general policy of that department of state, as well as its actual defects, culminated in the appointment of a royal commission of inquiry, which in 1909 presented reports recommending the abolition of the local boards of guardians and transference of their duties to the larger public health authorities.

Behind these proposals of the royal commission lay the absolutely sound principle—which many years previously had been recognized by the pioneers of public health—that the treatment and the prevention of disease cannot administratively be separated without injuring the possibilities of success of both. The public health activities preceding the report of the royal commission illustrate this axiom, such as the isolation and treatment of infectious cases, the treatment of tuberculosis, the provision for the care of parturient women and of their infants, and the medical inspection and treatment of school children.

It was an even greater misfortune to the satisfactory progress of public medicine that the report of the royal commission on the poor laws was not followed by legislation on the lines of its recommendations. So much of destitution is associated with sickness, and sickness is the cause of such a preponderant share of the total destitution in our midst, that the continued administrative separation of the two problems of poverty and sickness is inconsistent with a full measure of success.

Had the transfer of the duties of the poor law authorities to the councils of counties and county boroughs been adopted, and ancillary legislation enacted, the public health organization would have at once possessed a medical service for the poor of some 4,000 doctors, in addition to the doctors already engaged in the public health service; it would have had large infirmaries and the other medical institutions of both services; would have been able to make liaison working arrangements with the committees of voluntary hospitals; and there would have been secured a greatly improved medical service, freed from poor-law shackles, which could gradually be extended as needs and policy indicated.

Insurance versus Public Health

Political circumstances led to the adoption of a course which medically ran directly athwart the course of needed reform. The National Insurance Act of

1911 was passed, giving sickness and invalidity benefits to all employed manual workers and to others below an income limit of £160 (recently increased to £250), who could contribute a weekly sum which was considerably less than half of the estimated cost of the benefits to be received; and a new medical service was created, further complicating administratively the already existing medical services of the poor law, public health, and educational authorities, and converting the majority of general practitioners into part-time civil servants.

The case is an illustration of the moral contagiousness under modern conditions of life, of a new course adopted in any country. Bismarck's attempt to counteract socialism by insurance has been responsible for state and official experimentation in insurance in many countries, which at least in England was not actuarily, financially, or medically sound, and which has involved expenditure in administration entirely incommensurate with the benefits received.

Insurance against sickness and disability is a praiseworthy and valuable provision against future contingencies. I am not concerned here to point out inequalities to the insured in the English Insurance Act inherent in the apportionment of a flat rate for all ages, districts and occupations, and for both sexes, irrespective of known or suspected incidence of sickness, nor the difficulties created by continuing the non-

localized work of friendly societies and other private organizations, and at the same time creating local insurance committees, who furthermore were not organically related to local health authorities, and had no opportunity, therefore, to develop the conceivable potentialities of insurance experience as an aid to public health work. The act in its present form is now generally condemned; and it is significant that the need for its radical reorganization appears to be universally accepted.[2]

[2] Thus Mr. Bishop Harman, an ophthalmic surgeon, and a member of the Council of the British Medical Association, says:

"In my out-patient clinic 60% of the patients are insured persons who attend for treatment that is essential to their industrial efficiency. . . . A scheme of medical benefit which does not provide for specialist service and for institutional treatment is no scheme, it is poorer in status than the Poor Law provision which does all these things." (*British Medical Journal,* Mar. 15, 19).

Dr. R. Sanderson, of Brighton, writing on behalf of medical practitioners, says:

"We are the victims of a half-fledged, inadequate piece of legislation which is founded apparently on the supposition that disease can be dealt with effectually by giving bottles of medicine or liniment to the sick, or that if this fails and the sick get worse, they can be sent to one of the overcrowded voluntary hospitals with which the legislature has nothing whatever to do. Anything more unsatisfactory to the sick, or demoralizing to us as a profession, it is hard to imagine."

He then proceeds to advocate an urgent need of the profession, viz: the establishment of an adequate number of

Two medical benefits (medical and sanatorium) and a maternity benefit were conferred under the act; but, as they have been administered, it cannot be affirmed that any marked public benefit has accrued; and it is certain that if the same amount of money had been placed in the hands of public health authorities to provide adequate medical aid to those needing it, of the kind most lacking and which they could least afford to obtain, great benefit to the public health would have been secured.

What was given? (1) There was the medical benefit, each insured person being entitled to the services

auxiliary hospitals throughout the country, staffed by teams of general practitioners, to which all practitioners can have access, and to which they can send cases requiring clinical observation of any kind, rest or treatment that cannot be carried out in the sick person's home. (*British Medical Journal,* July 19, 19.)

Dr. Howarth, Medical Officer of Health of the City of London, and Dr. B. A. Richmond, Secretary of the London Panel Committee, affirm "the limitation of medical benefit to insured persons alone cannot continue. Another service has been added to the many competing classes of state treatment"; and they bring out the fact that personal contributions of insured persons are swallowed up in supplying the sickness and disablement benefit, and contribute nothing to the cost of the sanatorium benefit, maternity benefit, or medical benefit.

Dr. H. S. Beadles, Secretary of the Stratford & West Ham Panel Committee, says: "The British Medical Association should fearlessly acknowledge that the attendance under the National Insurance Act, which is itself a part-time State service, is an absolute failure and amounts to little more than first aid, carried on at an enormous cost."

of a medical practitioner of his own choice (a "panel" doctor). The services given were limited by regulation to mean such medical attendance as is "within the ordinary professional competence and skill" of a medical practitioner; and so the treatment given has often been more limited than what is given by the more advanced poor law authorities. The latter can supply hospital treatment and expert assistance when required; under the insurance system no such provision is made. The insured patient is not entitled to surgical operations when needed, except of the simplest character; treatment of eye, ear, nose and teeth conditions is commonly excluded; no appliances are given except a few bandages and simple splints; and there are no facilities for modern scientific laboratory investigation, except those provided gratuitously by public health authorities. Furthermore, by the rules of most friendly societies sickness (monetary) benefit during treatment of illness due to the patient's misconduct is excluded.

The title of the act—National (Health) Insurance Act—has hitherto proved a misnomer. The panel or contract system of medical treatment of insured persons has done much to continue the obsession of the public with the conception of medical care as consisting of a "visit and a bottle"; and so long as the doctor's medical work is on the present basis, and he is under the constant temptation, not only to accept

more patients on his panel than he can satisfactorily treat and to give each patient on application the mental satisfaction of a "bottle," but also to be more than lenient in the giving of sickness certificates, it will remain questionable whether on the balance state insurance against sickness does more good than harm. If medical consultants and referees, treatment centres, and hospitals are in the future provided for insured patients, this will mitigate the evils of the panel system; but the present contributions of patients will not purchase this additional provision. All the new money needed, and most of the money needed under present conditions, must continue to be provided by the state and employers of the insured (a form of taxation); and provisions thus made, like the present contributions of the state for insured persons, are in direct contravention of the general principle that government grants being derived from the whole community, should enure to the benefit of the whole community in need of them, and not only to the benefit of a section of it.

About one-third of the total population of Great Britain is included within the terms of the National Insurance Act. If the wives and children of insured men were also included, as has been proposed, over two-thirds of the total population would be embraced in the scheme; but as persons manually employed, but working for themselves—e.g., cotters and hawkers, are

encluded, and as persons not manually employed cannot be insured unless their income is below £160 (recently raised to £250), large classes of the population who can ill-afford to pay for their own medical attendance are excluded from the operation of the act, and taxed to pay the benefits of insured persons.

(2) The sanatorium benefit was intended to secure for the insured person special treatment for tuberculosis, while capital sums were provided for the erection of sanatoria and hospitals for consumptives for insured and non-insured alike. Fortunately during the passage of the bill, the provision of these institutions for insured persons was delegated to public health authorities; and as it was already within the power of these authorities to provide such institutions and tuberculosis clinics for the entire population, and as the infection of tuberculosis is no respecter of parliamentary distinctions between insured and non-insured, there was little difficulty in persuading the government to promise half the total approved local expenditure on the treatment of tuberculosis in institutions, whether this was given to insured or non-insured persons. Indeed when local authorities were willing to undertake their share in a complete scheme for the treatment of tuberculosis an insured consumptive person might be regarded even as paying fractionally for his treatment while a non-insured person received such treatment gratuitously.

(3) The maternity benefit, conferring thirty shillings on the wife of an insured person, and an additional thirty shillings if she also is an employed person within the meaning of the act, on the birth of her infant, was perhaps the most popular benefit under the act. The money was given unconditionally, and thus an opportunity was lost of insuring that the benefit should improve maternal and infantile prospects.

Collaterally public health authorities, central and local, were beginning to organize medical and nursing assistance during pregnancy, in confinement and afterwards for the mother, and similar assistance on a large scale for infants and children under five years of age. And there will, I think, be no hesitation in agreeing that the *supply of service* at this critical period of the mother's and infant's life, so as to insure the most satisfactory recovery of parent and the best start in infantile life, is infinitely more important than a money grant.

I cannot pretend to have more than touched on the fringe of the complicated subject of insurance in relation to public health. The inauguration of the act meant an enormous increase in the direct relationship of the medical profession to the state. A great stride in the socialization of medicine was taken. But it was done ill-advisedly; it continued a false and low ideal of isolated general medical practice; it has even been described as a fraud on the insured, in view of the

incompleteness of the medical service provided; and it diverted into an unsatisfactory channel the energy and money which were urgently needed for the immense good obtainable by reform of poor law and public health administration, and extension of their medical services. Had the lines indicated by history and experience and by the report of a strong royal commission on the poor law—there was a majority and a minority report, but both agreed in the chief essential points—been followed, England would now possess a nearly completely unified state medical service, instead of standing at the point whence false steps need to be retraced, with a view to a coördinated and simplified medical and public health policy. With the principle of contributory insurance to secure monetary support during illness there can be no quarrel; but in the interest of national efficiency complete medical provision, preventive and curative, must be made by the state, irrespective of insurance, for all in need of it; and the medical practitioners employed in the necessary certification of such insurance work as is continued must, if the insurance is to be satisfactory, be employed under conditions which will render them independent of the favor of the insured, and will enable them to utilize their knowledge of each patient's case for the needed preventive measures, whether these be concerned with the sanitation of home or factory or workplace, or with personal habits.

The Need of the Future

It is, I think, clear that the state will year by year take an increasing hand in medical matters. It is useless, even if it were desired, to attempt to oppose the inevitable and the eminently desirable trend towards vastly increased utilization by the state of medical science in the interests of humanity. It is for physicians to guide the course of events, and to insure that no plant is sown which will afterwards need to be uprooted; that no development is permitted which will hinder the fulfillment of our ideal. Personal hygiene forms a rapidly increasing part of public health work; hence it is indispensable that all forms of public medical service shall be linked up with the public health service and controlled locally and centrally in accordance with this. This may imply—and in England it does imply—the urgent need for reform and reconstruction of local as well of central public health administration; but to attempt to separate medical from public health provision is to repeat the blunders which, despite skilled advice to the contrary, have been made on two great historic occasions.

A complete service, adequate to the needs of the community, cannot be secured by a session's legislation. It must grow as the result of steady advance. The motto in growth might well be, "First things first." What are the medical services which are provided too sparsely at the present time and for which

the masses of the population cannot afford individually to pay, except possibly to a fractional extent? There can be no doubt as to the answer. What is most urgently needed is the provision of skilled hospital attendance for every patient who can be more satisfactorily treated in hospital than at home. Next to this comes the provision of gratuitous medical services—(e.g., maternity and infant consultations, eye, throat, ear, skin and venereal diseases, tuberculosis, X-ray departments) preferably linked around a hospital, where patients can be sent by private practitioners for an expert opinion, or in certain cases may present themselves independently. And as important as either of the preceding desiderata, is the provision of a complete nursing service, on which each private practitioner can call for assistance as required, payment, if any is exacted, being on the easiest possible conditions, and not made compulsory.

The hospital under such circumstances would become a centre from which community work of the highest value would radiate; and patients, private practitioners, and the staffs of hospitals would alike live in a new world in which the interest and efficiency of medical work would be greatly increased. The present irregular localization of hospitals makes the realization of such a scheme difficult; but local partially successful schemes are already in operation; difficulties can be overcome with good-will; and even-

tually we may hope to have for each unit of subdivided public health administration and as an organic part of this, a hospital, with out-patient or dispensary clinics, and radiating from these the various forms of medical attendance, domiciliary nursing, public health nursing, and sanitary supervision which are needed.

In securing such a result there will be needed medical practitioners who are imbued with the ideals of preventive medicine in its widest sense. Let me, in this connection quote the following extract from a recent official report of my own:

> There is needed a reconstruction of the training of each medical student, which will make preventive medicine in its widest sense an integral part of his training, and will insure that before he begins practice he has definite instruction in the application of the whole of his knowledge to preventive purposes. The past conception by the public of the relation of medical men to the community—apart from the special case of medical officers of health—has been mistaken. The doctor has been regarded as a help when serious or acute incapacitating illness occurs, and he has but seldom had the opportunity of giving advice in the earlier and more controllable stages of illness. His training has been conducted on the assumption that his chief rôle should be on present lines, with the result that most medical practitioners enter into practice with a too scanty knowledge of hygiene and preventive medicine, and have to learn slowly in belated experience the influence of environment on the health of their patients. The teaching of medicine should be much more largely physiological and hygienic than at present, and such subjects as food values, the hygiene of infancy and childbirth, the physiology of breast feeding, and the influence of environment on the health of their future patients should be the subject of careful

training—especially in regard to housing, feeding, clothing, and conditions of work. Were this done, the ideal condition, in which each medical practitioner becomes a medical officer of health in the range of his own practice, would approach realization.—[Annual Report to the Local Government Board, 1917–18.]

Many medical practitioners already fulfill this ideal. It would oftener be realized were it not for the excessive work which many are obliged to undertake. In the early history of public health in England poor law medical officers, attending the impoverished in their dwellings and familiar with their home conditions, became part-time medical officers of health. But the attempt to combine prevention and treatment proved unsuccessful, because these officers visited only a small proportion of the dwellings of the poor, because they were not trained in preventive work, and because the good seed of preventive work was choked by the increasing demands of lucrative private practice. In connection with the future general medical service, curative as well as preventive, it is not beyond the range of human ingenuity to provide schemes for district medical officers (health and clinical) adequately trained in public health work, and linked up closely with the hospital and dispensary unit for their area.

This will cost money. But sound health is our greatest personal and national asset, and disease is always more expensive than health. "Who winds up days with toil, and nights with sleep" has "the fore-

hand and vantage of the king," if the latters suffers in body or mind. The real wealth of a nation does not consist in its money, in the volume of its trade, or in the extent of its dominion. These are only valuable insofar as they help to maintain a population—and not only a portion of it—of the right quality; men, women and children possessing bodily vigor, alert mind, firm character, courage and self-control. This ideal can never be realized unless and until the medical men of the future train themselves for and devote themselves to their essential share in its fulfillment, and while keeping this ideal in view see to it that every step taken is one which will be consistent with the complete scheme of the future.

We are all concerned in the efficiency of every member of the community, from an economic as well as from a humanitarian standpoint. Can we be satisfied while a large proportion of the population do not obtain medical and ancillary assistance to the extent of their needs? Does such a state of things conduce to the settlement of social unrest? Is it consistent with Christian principles?

If communal provision has been recognized as a duty for police protection, for sanitation, for elementary education, should it not likewise be admitted for the more subtle and maleficent enemies of health which have been recognized, but which in no community have hitherto been completely combatted?

We scarcely realize how far we have gone in the socialization of medicine. It is impossible to go back, or to stand still. The services of the medical profession are needed, not only to provide the necessary service, but in helping to determine its conditions. One essential item will be the substitution for fees during sickness of an annual payment to private practitioners by each family for supervising its members in health, for inquiry into their industrial and domestic life, so far as it contains elements inimical to health, and for giving preventive more than curative advice. The second and most urgent element consists in the organization of hospital and consultative expert services for all, which, while greatly increasing each patient's prospect of prompt recovery, will enable the general practitioner to escape from the soul-destroying inefficiency of unaided medical practice.

Of course, any service provided, whether partial or complete, will need to be kept free from "political pull." This spells inefficiency; and inefficiency means disease and death. "Political pull," although not in the official list of Causes of Death, is among the potent causes of excessive mortality; and for this, every one of us must bear his individual share of responsibility, insofar as we have abstained from active support of sound and clean government, when we were unable to take an actual share in government.

CHAPTER IV

Insurance and Health[1]

So far as a majority of the population are concerned, it is necessary to realize that they are never far removed from the line dividing destitution from adequacy, using the word destitution to mean insufficiency or lack of some provision essential for health and continued welfare.

It may be urged that this is owing in large measure to the improvidence or thriftlessness of the wage-earners who are chiefly concerned; but such a statement fails to appreciate the higher standard of conduct and the greater self-denial which is demanded from weekly wage-earners than from ourselves, if out of their wages provision is to be made for a "rainy day," without affecting unfavourably the present health of the worker or his family.

The general appreciation of the above considerations has led to the provision of non-contributory old-age pensions in the United Kingdom; and similar sentiments have led in many countries to compensation for accidents at the expense of employers; and to the

[1] An address given to the Quiz Medical Society, New York, Feb. 14, 1920.

various national systems of insurance against sickness. With the principle of sickness insurance there can be no quarrel. It is the substitution of coöperative for individual provision, thereby distributing some of the loss and eliminating some of the risk of suffering from illness.

The value of any system of sickness insurance, however, must necessarily be judged by several criteria.

Criteria of Value of Insurance

Is the adopted system one which is equitable in its incidence and economical in its administration; and does it supply maintenance during sickness adequate for the needs of the patient and his family, while at the same time offering no temptation to the patient to continue on the sick funds, when his condition no longer necessitates this?

In the case of the English National Insurance Act, these questions unfortunately cannot be answered completely in the affirmative.

The finance of the Act arranges for the uniform contributions (differing for each sex) from some thirteen million persons, living under most diverse conditions, to furnish equal benefits (differing for each sex) to all insured persons, irrespective of age, locality, or occupations; while at the same time some 23,000 independent insurance societies continue to administer the distribution of money benefits, each with its own segre-

gated experience, some prosperous, others owing to excessive sickness almost bankrupt. There is the remote possibility for each society to pay additional benefits if justified on the quinquennial valuation.

Substantially men and women have been placed on a similar financial basis. The sickness of pregnancy apparently was overlooked; and for this and other reasons the insurance funds for women are financially inadequate for the benfits promised.

On the point of equity, it must be admitted that any system of so-called insurance which, like that of the English Act, excludes a large proportion of the population who, while paying in taxes in aid of the insured, require but do not receive their benefits, is contrary to the principle that any expenditure of Government funds should enure to the whole community in need of the provision in question.

The provision of 10 shillings a week for incapacity lasting 26 weeks (7s. 6d for women), followed by 5s. a week disablement benefit, although inadequate provision for family maintenance during sickness undoubtedly is helpful. It is mischievous when in consequence of this provision, the patient is tempted to remain at home under unsatisfactory domiciliary treatment, instead of receiving the shorter and more successful institutional treatment, which should have been given.

As to economy of administration, I can speak only with reserve; but it requires little imagination to ap-

preciate that the numerous migrations of wage-earners imply great difficulties in book-keeping as well as in securing insurance medical attendance, and that a very high percentage of the total insurance funds is swallowed up in elaborate and meticulous account keeping.

The point as to malingering can best be considered in connection with a discussion of the

Medical Benefit

This consists of such medical treatment, at home or at the office of the panel doctor,* as "can consistently with the best interests of the patient be properly undertaken by a practitioner of ordinary professional competence and skill."

The Act itself promised "adequate medical attendance and treatment," but under regulations this has been limited, so that in practice it means chiefly the treatment only of minor ailments. Thus (*a*) there is no provision for hospital treatment of patients needing this, except the Sanatorium provision for tuberculosis; (*b*) with the same exception, there is no provision for expert services. A patient requiring operative treatment for fractures, for an amputation, or an operation for appendicitis, or needing treatment for some affection of the eyes, or nose, or throat, or ears,

* *I. e.*, any doctor in a given area who is willing to treat patients under the conditions of the Insurance Act.

or the intravenous treatment of syphilis is excluded from medical benefit. So likewise are dental requirements. (*c*) There is no provision for pathological diagnosis, except such as is common to the entire population, and no X-ray diagnosis, except possibly for tuberculosis. (*d*) There is no provision for nursing assistance.

In view of the unequal distribution and insufficient provision of hospitals for the general population, of their inaccessibility to large masses of patients, and of the insufficiency of the present provision for the scientific aid to treatment which modern medicine demands for insured and non-insured alike, it is evident that the provision for medical treatment under the Act is unsatisfactory and inadequate, and that it conduces to prolonged illness, which treatment provided on more satisfactory lines would avoid.

To state adequately the defects of the medical provisions of the Insurance Act a long address would be required. They are, however, generally well known, and their existence and seriousness is admitted by all. (See also page 90.)

It is necessary, however, to say more on the

General Practitioner Treatment

provided under the Act. Every insured person is allowed to choose his own doctor within a given distance. In practice very few patients change their doctor at a

fixed time each year as they are allowed to do; and a considerable proportion of insured persons do not trouble to choose a doctor at all. The free choice of doctors is rather a sentimental than a real demand. The panel doctor is paid an annual capitation fee, and hitherto no limit has been placed on the number who may place themselves on his roll. The domiciliary treatment given by some doctors is entirely satisfactory within the limits stated above. Commonly, however, it is as unsatisfactory as the "club practice" which preceded it, and against which the British Medical Association inveighed. It involves a continuance of the mischievous ideal of medical practice of the past, a conception still held by a large portion of the public to its own detriment, that a hasty inquiry, a perfunctory examination, and a bottle of medicine, represent the best that scientific medicine can offer a patient. Had there been organized a chain of medical services for all needing it, including consultations and expert assistance when needed, every patient having the right to call for these when dissatisfied with his panel doctor, including also hospital provision and nursing as required, what a different story could now be told!

It is probable that some at least of these additional services will be added gradually; but it must be noted that the present payments of the insured will not suffice to pay for them; and that if they are to be pro-

vided,—as they will probably need to be,—out of public funds, the general public are in equity entitled to these services even though they are not insured.

If these complete services were provided, the medical treatment now provided largely at the expense of the community could be made a means for advancing the public health. This it can not at present claim to be. For nothing is more certain than that the prompt and adequate treatment of disease curtails its duration, diminishes its severity, and prevents its spread to others.

But even such a service would not fulfil its complete possibilities for good unless it were joined to a system of hygienic supervision of each insured person and of each insured person's family, this system being organically linked up with the wider public health work of the larger Public Health Authorities.

The chief justification of a national system of insurance against sickness is that it shall be an active auxiliary in the prevention of disease. At present it is doubtful whether any national system of sickness insurance has been so. It has only been so, to the extent to which the medical treatment of the masses of the population has been improved by it; and no such improvement can be claimed for British insurance. The wider possibilities of prevention of illness and elevation of the general standard of health, by making each medical practitioner a family adviser on health more

than a practitioner in medicine, have not been realised or even brought within sight.

Evils of the Present Medical Benefit

The inadequacy and unscientific character of the medical treatment given to insured persons are associated with a large amount of lax certification of illness, which is injurious to the character of doctor and patient, besides being unfair to the insurance funds. Those interested in this point should read paragraphs 118, 119, 120, 121, 123, 125 of the Report of the Departmental Committee on Sickness Benefit Claims (Official Report Cd 7687).

> There is almost universal testimony of the belief (of representatives of friendly societies) that medical certificates are granted recklessly (par. 119).
>
> Doctors . . . feel a difficulty in refusing certificates owing to the possible effect upon their practice. . . . If a doctor falls out with his patient he loses the entire family (par. 120).
>
> These statements . . . are representative of an enormous volume of dissatisfaction with the action of the medical profession.

The Committee state:

> We are of opinion that in many cases doctors have given certificates for sickness benefit in circumstances in which these certificates were not justified.

From the standpoint of the conscientious practitioner the present position is profoundly unsatisfactory. He has no official access to arrangements for

consultative and expert advice, he has no hospital beds, no skilled nurses. For the patient the position is anomalous and leaves him with but a fragment of what he could reasonably expect under the terms of the Act.

Of the other medical benefit, i.e., the Sanatorium benefit and of the Maternity benefit, I can say only a few words here. The former gives the insured patient little more than in the more enlightened sanitary districts is being provided, independently of insurance, by Public Health Authorities. It would have been practicable to make it obligatory on all Public Health Authorities to provide adequate treatment for all consumptive patients. They are already authorized to do this under Public Health Acts, and the duty could have been, and can still be made, obligatory by regulation. And in that case the connection of the Sanatorium Benefit with the National (Health) Insurance Act would happily cease, and one great obstacle to a really national organization against tuberculosis would disappear.

The Maternity Benefit provides a money payment for each insured woman and for the wife of each insured man on the birth of a child. The money payment is made through the Insurance Societies unconditionally, instead of being made a means of securing that the birth takes place under circumstances favourable to mother and infant. During recent years public

health authorities (aided by grants from the Government of one half of the total approved local expenditure) have been making medical and nursing provision for the care of women in pregnancy, in parturition, and during the nursing period, on a rapidly increasing scale, the grants including not only skilled assistance but also domestic aid (home helps) in suitable cases. There can be no question that increased provision in these directions will have a more generally beneficial influence than money payments, and should at least supplement the latter.

To sum up, if the national English system of insurance is to continue, it ought in my view to be shorn of its medical functions and to be limited to money payments during sickness, in return for the weekly contribution made by employees and employers. If it be thought inadvisable to limit the State's contribution, as in Germany, to what is spent in administration, then in equity the present system of insurance cannot continue to be limited to those now participating in it.

I hold strongly that the State should embark on a much larger scale than at present on

The State Treatment of Disease

The great and fundamental mistake made in the initiation of the English Insurance Act was that in effect it ignored the entire history of the relation of preventive and curative medicine to the State. This history cannot be detailed now: but, briefly, for long

years the destitute had been entitled to domiciliary and institutional treatment at the public expense. This medical aid was given by Poor Law Authorities, and their method of doing this work had rendered the benefaction commonly unacceptable. Then Public Health Authorities on a steadily increasing scale found it necessary to treat disease in order the more effectively to prevent it. And so fevers and smallpox, and chronic infective diseases like tuberculosis and syphilis came under treatment, practically for all comers, at the public expense. As already mentioned the fundamental importance of maternity and childhood has also been realised, and the State is now taking an increasing share in ensuring health at these periods of life. And while Public Health Authorities were increasing their activities, Education Authorities began to subject school children to medical inspection, and to treat them for the detected defects, the treatment of which they could not otherwise secure. And so, not to make this sketch too complex, three great central government departments or sub-departments and three sets of local authorities were engaged in medically treating the people at the public expense. This sketch does not include the smaller (nevertheless enormous) amount of treatment of disease by voluntary hospitals. It is safe to state that at any one time one-half of the total treatment of disease is being carried out at the public expense. If the domiciliary

treatment of insured persons is worthy to come into the same category as the skilled services mentioned above, the proportion of disease already treated at the public expense greatly exceeds 50 per cent. (Note.—Less than four-ninths of the cost of medical treatment of insured persons comes from the contributions of the insured.)

The complexity of local authorities concerned in the treatment of disease was wilfully increased under the National (Health) Insurance Act; and, contrary to the advice of public health workers and of the Royal Commission on the Poor Laws a golden opportunity for securing the merging of poor law into public health work and for initiating a unified system of State Medicine for all who need it was lost.

Poverty to a preponderant extent is due to sickness Two statements have recently been made by the Medical Society of the State of New York, viz., that "evidence is against the fact that any considerable amount of impoverishment is caused by illness," and that they can find no "available evidence that . . . in the main, medical attendance in this State is grossly deficient in quantity or grossly defective in quality." (*Monthly Labor Review,* January, 1920, p. 256.)

One can admire the optimism, while denying the accuracy of the first statement: of the second statement, as it refers to the State of New York, I can say nothing, except that a statement identical with the one

denied above would be literally true for England. In 1907 I wrote, "the coexistent but uncoördinated systems of treatment of disease have failed lamentably to provide what the health of the community requires —means for ensuring effectively the early recognition and proper treatment of all disease" (*British Medical Journal,* Sept. 14, '07). That remains broadly true, and no remedy will suffice which does not ensure for every member of the community in essential particulars as good treatment as the most favored now possess.

The socialization of medicine has gone too far, its beneficent effects are becoming too well appreciated, to render it possible, even were it not undesirable and mischievous, to hinder its further extension. We have travelled more than half the road towards the goal of general provision of skilled medical assistance by co-operative means, i.e., out of the communal purse. If this is desirable for elementary general education, it is even more important when the aim is the restoration and the maintenance of the highest attainable level of health for each member of the community, who is willing to share in the offered benefits. If we include the third of the total population who now receive in Great Britain the unsatisfactory medical benefit under the National (Health) Insurance Act, and remember the rapidly increasing scope of voluntary and official institutional treatment of disease, hesitation in accepting

the inevitable should be replaced by a determination to guide future developments and to render them efficient and economical. What is good for the public is good also for the members of the medical profession.

If asked to advise on the steps which it is advisable to take in regard to Sickness Insurance in a community which has not adopted a scheme, I should emphasise the prior necessity for the State to secure a completely satisfactory system of public medical care before engaging in the more difficult task of providing monetary payments in sickness. It is well to bear in mind that medical attendance is a form of communal assistance the demand for which does not tend to increase with the supply; whereas monetary benefits have always shown this trend, as demonstrated by the experience of both Friendly Societies and charitable agencies. As satisfactory administration of monetary benefits during sickness depends on securing medical certification which is above suspicion, it is fundamentally important that under any method of public medical attendance the certification (for incapacity to work) should be completely independent of any coexistent system of sickness insurance.

A completely efficient public medical service, if preventive as well as curative, will diminish greatly the monetary calls on sickness insurance and lower its expense. Let me briefly enumerate the conditions which such a medical service must fulfil:

1. It must possess facilities for consultations with physicians and surgeons having special knowledge, equalling in efficiency those possessed by the well-to-do.

2. All modern pathological and physical aids to diagnosis and treatment must be available.

3. Hospital treatment must be secured for all whose illness cannot be satisfactorily treated at home.

4. In the ordinary treatment of patients by medical practitioners there must be provision for team work, as for instance at local dispensaries, so that a patient may, where this is desirable be conveniently examined by several doctors. (Group medicine.)

5. Skilled nursing must be obtainable for patients needing to be treated at home, though the extent to which this is required will be greatly reduced by increased use of hospital beds.

6. In every district the patient might have the choice between several doctors; but unnecessary change of doctors should be discouraged. Subject to general regulations, however, he should be entitled to demand a consultation when not satisfied as to his treatment.

7. The doctor chosen by the head of the family should be held responsible for supervising the health of the whole family; and should be required at least once in three months to arrange to see each member of it, to ascertain any existing disease, or any habits, manner of life or work tending to cause disease, and to make a concise statement to the medical officer of

health or health commissioner embodying his recommendations as to any public health action which may be needed.

8. The scheme at first might be limited to one section of the population, but there is no reason why ultimately it should not embrace all willing to join it.

9. The remuneration of doctors engaging in this public work should be adequate at once to attract junior members of the profession. The remuneration should not be on a capitation basis, but by salary, modified according to the success achieved. The scheme would enable doctors to have ample leisure and holidays and to take part in post-graduate courses. Every inducement should be given to physicians to undertake along with their family work special work in connection with one of the following activities:

Pathological laboratories,
Hospitals,
Health centres for infants and mothers,
Prenatal and post-natal clinics,
Consultant obstetric work,
Pre-school clinics.
School medical inspection and clinics,
Industrial inspections and clinics, etc.

10. Medical schemes on the above general lines can only be completely satisfactory to the extent to which every physician taking part in them becomes imbued with an appreciation of the *almost unlimited pre-*

ventive possibilities opened up by the opportunity to treat disease, and by the realization likewise that an essential part of his family work should consist in detecting the *beginnings of disease* and in detecting and securing the removal of domestic, dietetic, housing, industrial or other factors liable to cause disease.

If these ideals can be even partially realised, we shall have approached the time when every practising physician will become a hygienist, and when any sickness insurance still demanded or required will be on a scale much lower than is necessary at the present time. In short, compulsory sickness insurance under present conditions is a measure of relief. It has almost as little prevention involved in it, as has insurance against the risk of fire. Relief must be given, by insurance or otherwise. How much preferable, however, it would be to precede it by a far-reaching scheme of effective preventive and curative work, or at the least to place it in a strictly subsidiary position to such a scheme in actual operation!

CHAPTER V

Some Problems of Preventive Medicine of the Immediate Future[1]

The Great War has changed our outlook on social, including medical, problems; and has made all of us consider anxiously in the midst of the terrible wreckage from war, what useful lessons may be garnered for our future guidance. In speaking of losses, I am not referring to financial burdens, though these are fabulously high—the bare statement that the British national debt has increased from 645 to near 8,000 millions sterling, brings this home—and we shall, most of us, go relatively poor for the rest of our lives and our children likewise. Nothing but the most effective and scientific use of our energies on the part of workers of every class can save us from protracted poverty.

I am thinking rather, however, of the losses of life and limb, of hearing and eyesight, and of reason, which have been experienced—one or other—in nearly every other family in the British Empire, and which show once more the wantonness of war: how cheaply life

[1] An address to the Academy of Medicine, Toronto, June 20, 1919.

is held by it, how careless it is of the individual; and how disregardful it is of human promise and performance.

The destruction of over 700,000 lives of sharers in our common Empire, killed in battle or dead from wounds, represents an imperial loss, a terrible destruction of the real capital of the Empire—its manhood—and of the flower of that manhood; and generations will come and go before the Empire recovers completely.

Gains from War

But we can set out some great gains from war.

1. Not the least of these is the fact that the fears entertained by the more pessimistic that we had become enervated and decadent have been falsified on many a stricken field; and not less in the strenuous work of those who have worked remote from the battlefield. Our men and many women also have shown themselves willing to give their lives for great impersonal ends. Their lives have been sacrificed—for our children, for liberty, for peace, for security against military barbarism, and for high ideals of life. The emergence of such a high proportion of our total population from selfishness and self-centred life to a sacrificial position, raises hope that rightly directed appeal to the collective self of the community during peace time for aid against the horrors of peace—especially

those caused by disease—will also succeed in enlisting the assistance of the majority of the population and thus removing the vast mass of removable disease and disablement which now prevails.

2. The war has knitted together in active comradeship the Old Country and its younger and more energetic children in the Dominion of Canada and in other parts of the British Empire, in bonds of mutual indebtedness and gratitude and in admiration of great deeds, in a manner and to an extent which must forever preclude misunderstanding or separation.

In these two respects especially—and in others which I shall dwell on more fully—we can, as Wordsworth put it, when commenting on the wars of the French Revolutionary period:

> Though doomed to go in company with Pain,
> And Fear and Bloodshed, miserable train!
> Turn our necessity to glorious gain.

The Work of Women

3. The war has revealed to us the great extent to which women in emergencies can replace men. I need not repeat the story of how women in a few months mastered mechanical intricacies in munition works, for which previously a long training was thought necessary; nor how educated women after a few months' intensive training were able, under war conditions, to undertake the work of fully trained nurses. We can-

not ignore these facts; and in regard to nursing, they should lead us to consider whether, under modern conditions of life, it is necessary that the great body of nurses, like the great majority of medical practitioners, need to be experts in major operations, and whether they should not be trained chiefly from the standpoint of the ordinary illnesses of the household. Particularly, it is important to recognize that the training of the health visitor or public health nurse must diverge at an early period of training from that of the clinical nurse.

In another direction women are about to influence vitally the problems of public health in the near future. The municipal and parliamentary vote has been given to women in England, and is not likely long to be withheld here. How will they use it? When they use it will "politics" be a name for a contemptible thing as it has become in some towns and states, or will women insist on clean administration and efficient work to secure the health and welfare of the community?

Prohibition of Alcoholic Drinks

4. The prohibition law against alcoholic drinks in the U. S. A. is largely the work of American women. Whatever view be taken of this law—and I regard it as one of the most significant social events of the age—let there be no doubt as to the essential facts of the problem.

Alcoholism is a potent enemy of the race. It is a great creator of avoidable poverty. It makes the bed ready for tuberculosis. It is a frequent excitant of exposure to the infection of venereal diseases; it swells the ranks of fatherless children, and of neglected infants; it helps to fill our prisons and our hospitals. Let it be admitted, if you like, that light wines and beers are pleasant, and in strict moderation with meals are beverages to which little or no harm can be traced; but heavier drinks and all non-medicinal spirit drinking are to be condemned; and the country which distinguishes itself by abolishing these drinks will, other things being equal, in my opinion, inevitably attain quickly an industrial and economic superiority over all countries which continue to follow the older ways.

5. A great gain during the war is constituted by the fact that science has come into its own. The war has been described as a war of engineers. Its chief successes have been won largely by applied science; and it is gratifying to record that the Anglo-Saxon intellectuals, when their services have been engaged, have proved themselves more than equal to the German scientist, whether in physics or chemistry or medicine.

The facts as to the wonderful extent to which disease has been prevented during this war need not be detailed. Intestinal diseases have been kept strictly under control. In no previous war has smallpox or typhoid fever claimed so small a toll on the belligerents.

Malaria, it is true, has claimed many victims, owing to our soldiers having to operate in countries in which the needed precautions could not be completely carried out. Typhus has scarcely claimed a victim among the British forces, and although trench fever was common, medical discovery, by showing its relationship to the bite of the louse, has placed within reach an immediately practicable means for avoiding this serious cause of military disablement.

Three sets of diseases have not been successfully combatted during the war—the group of respiratory affections, tuberculosis, and venereal diseases, and on each of these it is desirable to make a few remarks.

Respiratory Diseases

6. In the group of respiratory diseases I think we should include a number of diseases not commonly regarded as such, but in which, so far as can be judged, infection is received by inhalation; and I would, therefore, group together such miscellaneous diseases as poliomyelitis, cerebro-spinal fever, measles, bronchitis, pneumonia, and influenza. All agree in one particular, that attempted preventive measures against their spread are dubious in effect. These diseases naturally divide themselves into two groups: the first comprising measles and influenza, both of which spread—when, as in influenza, the almost unknown conditions determining spread are present—to an extent only

limited by the failure of susceptible persons; and the second comprising the other diseases already enumerated, of the conditions determining attack from which we are profoundly ignorant. We do know, however, concerning cerebro-spinal fever and measles, that they spread more easily and become more severe under conditions of massive overcrowding; and their unusual severity in war is thus partially explained. Beyond this obvious indication for prevention we can do but little.

It may, however, be mentioned, that in England during the last few years, we have determined that our lack of ability to prevent outbreaks of measles shall not prevent us from attempts to *diminish their fatality,* and the notification of this disease has therefore been enforced, as a necessary preliminary to prompt and fairly complete action, and local authorities have been urged to provide nurses to assist in the domiciliary nursing of cases of measles. Grants of half the expenditure expended in nursing this and some other children's diseases are paid by the Central Government. If the spread of infection cannot be stayed, it is our duty to diminish the loss of life by providing nursing assistance whenever required. This provision of nursing assistance in a number of children's and maternal illnesses, half the expenditure being paid from Central and half from local funds, will, I trust, soon be followed by a general provision of nursing assistance from public funds.

The recent epidemic of influenza has taught us several important lessons—First, we have been painfully reminded that we are completely ignorant of the causes of the pandemic waves of this terrible disease, which, at irregular intervals of years, traverse the world. We may surmise that the crowding and the mental and physical depression of war caused increased rapidity of spread and a greater fatality in the present outbreak; but influenza has spread and been only less fatal than in the present outbreak when there was no war, and we must admit our ignorance of the cause of this.

Numerous investigators in many lands have been striving to illumine our ignorance; but until success crowns their efforts, it is well to admit that on the large scale all attempts to prevent the spread of influenza have failed.

But, in this disease, as in measles, this failure in prevention is no reason for refraining from every possible effort to restrain death. In every country and in nearly every invaded district, many sick were unable to obtain adequate nursing and other domestic care. Here and there organized mobile team work partially overcame the difficulty; but the one lesson which emerges from this great pandemic is the necessity for having in every area a large nursing reserve. Here is one of many spheres of utility, which should, I think, be occupied by Red Cross workers, who have done such admirable work during the Great War.

Many of these Red Cross workers were not fully trained before the war, but intelligent workers under stress of circumstances showed themselves competent in many instances to undertake highly skilled work; while a much larger number under the supervision of more fully trained nurses and doctors were able to carry out satisfactorily the routine but still extremely important work, of ordinary nursing. During the influenza outbreak many such "Nursing Aids" did admirable work, and the epidemic has demonstrated once for all the absolute necessity of having available a large number of such nursing aids. Cannot these be employed on a large scale when no epidemic is raging? Is it necessary for every case of sickness that a fully-trained nurse should be engaged? Would not the physician be equally satisfied in a large proportion of his cases, if he had available a less elaborately trained assistant, who understood personal hygiene thoroughly, who could give an enema, could take temperatures, and would follow instructions implicitly and intelligently?

Incidentally I consider that some such modified and simplified training in actual nursing would form an adequate background for the special training required to obtain a competent school nurse, tuberculosis nurse, or public health nurse (health visitor); and that under present conditions a three years' training as a nurse is not the best foundation on which to build the special training required for these public health nurses.

Tuberculosis

7. A serious penalty of war conditions has been the increase of tuberculosis. It is not surprising that the crowding in barracks, the overwork and overstrain, the dirtier habits, and risks from expectoration in massed communities, should have increased tuberculosis among soldiers; both by activating latent tuberculosis and by introducing new infection. Nor is it surprising that under analogous conditions tuberculosis has increased among women, especially at the ages in which the enormous increase in their industrial employment has taken place.

The national anti-tuberculosis arrangements which were made in connection with the National Insurance Act had scarcely been fully organized when the war began. At an early stage it had become plain that in essentials non-insured must be provided for as well as insured, and Government grants of half the approved expenditure on the treatment of tuberculosis in the general population endorsed this principle. There was no reason, therefore, for the continued separate existence of the "Sanatorium Benefit"; and had it not been for political considerations the treatment of tuberculosis would probably already have been handed over to public health authorities, while leaving intact the general provisions of the National Insurance Act as to monetary payments and benefits. The same transference should apply also to the treatment of any

disease undertaken at the public expense. The treatment of disease, especially in its more difficult specialist and institutional branches, should become a matter of communal provision, to which every person would be entitled as he is to the common provision under our system of elementary education, or to the common use of free libraries and of drinking water.

There is needed a widely extended propaganda against tuberculosis. The public as well as the medical profession need to be educated, the latter in the carrying out of complete and prompt notification of cases of the disease, and in the use of all facilities provided for aiding diagnosis; the former in the risks of industrial and other dust infections, of indiscriminate expectoration, of alcoholism, of imperfect nutrition, of bad housing, and so on. We all need to learn the folly of imperfect measures against tuberculosis. Complete success can only be attained if we assume responsibility for the whole course of the life of the consumptive. Not only must educational sanatoria be provided—and, still more important—hospital treatment for all the emergencies of the disease and in advanced disease; but in the quiescent intervals assistance must be forthcoming to cover the margin between a living wage and the earning capacity of the expatient, and economic assistance must be provided for protecting the patient, and still more his family, from defective nutrition and from infection. To stop short

of this is to be extravagantly parsimonious; to do this is to economize in sickness and to secure increased efficiency in future generations. What better work can be thought of for Red Cross volunteers than in supplementing the work already carried out by anti-tuberculosis organizations and in extending and systematizing these agencies. Is not such peace work equal in importance with the war work which Red Cross workers have already accomplished?

Venereal Diseases

8. Venus and Mars are always closely associated, and it is a lamentable fact that one heritage of the war will be a great increase of venereal diseases in our midst. In England we had become thoroughly aroused to the magnitude of this evil even in peace time. The report of the Royal Commission on Venereal Diseases and the propaganda since actively carried out, have led to the taking of measures which I can only briefly enumerate. The duty has been imposed on every county and county borough council of providing aids to pathological diagnosis, and of providing clinics for the treatment of these diseases for all comers, irrespective of residential or monetary conditions. These clinics have been generally started throughout the country, and their use has been widely advertised and encouraged by propaganda in the form of lectures and addresses in factories and to various social groups,

and by public advertisement. In addition an enactment has been secured absolutely prohibiting the treatment of venereal diseases except by qualified medical practitioners, and prohibiting the advertising or offering for sale of any remedy for venereal diseases. In addition, arsenobenzol preparations are supplied to medical practitioners who have experience in their use for their own patients.

These measures do not cover the entire ground. The enforcement of police regulations against vice, the detention of infectious persons who cannot be trusted to refrain from spreading disease, the raising of the general standard of sexual morality—until public opinion demands that it shall be as high for men as for women—are among the reforms which are called for.

In encouraging social reform in these directions Red Cross workers have a most fruitful field of work, and they can render invaluable assistance in removing a canker which at present eats into the vitals of the community, and is responsible for untold suffering in women and children, for premature old age and paralysis in men, and for a large share of the total inmates of our lunatic asylums.

The Mother and the Child

9. I have left myself but scant time to speak of what is at once a chief lesson of the war and the most pressing problem in the preventive medicine of

the immediate future. I refer to the need for more complete protection of motherhood and childhood against the dangers besetting them.

It would be a mistake to assume that only since war began have efforts both by sanitary authorities and by voluntary agencies been made on a large scale to diminish infantile and maternal mortality. But during the war, and since it terminated, these efforts have been redoubled and are becoming universal; and there is opening out a prospect of safe maternity for mothers and of protected infancy for all newcomers on the stage of life. If only we are prepared to do what is almost immediately practicable for this end, death or injury associated with child-bearing will become rare, the loss of infant and child life will be halved, and what is still more important, mothers and infants will cease to be damaged by neglect or ignorance at critical periods of their life, and will not become burdens to themselves and to the community.

This is no visionary dream. Past experience shows that it is within reach. What other interpretations can be placed on the facts revealed in official reports?

I am unable to quote Canadian figures; but I am justified in assuming that differences similar to these I am about to quote from my own reports exist also here. The average number of deaths of mothers from complications arising during pregnancy, and at or after confinement, are one maternal death for every

250 infants born alive. In some parts of England instead of four mothers, six or even eight or nine mothers die for every thousand infants born. There are marked differences in maternal mortality in neighbouring towns and districts; and the only conclusion which fits in with the facts is that, in many parts of the country, the arrangements for medical attendance on mothers at and before their confinement are inadequate or deficient in quality or both.

The Maternity Benefit under the National Insurance Act, though a valuable evidence of the interest of the State in maternity, has not provided a sufficient remedy. It was an unconditional benefit limited to insured women or the wives of insured men, and there was no guarantee that the money allotted would be utilized in supplying the medical, midwifery, or nursing assistance needed by the patient, or in relieving her from domestic duties which she is unfit to perform. It was furthermore, inadequate for these purposes. We should not think of handing over to each individual householder an annual sum of money, advising him to expend it on a supply of books or in the education of his children. It is more economical and more effective to provide free libraries and public elementary schools without payment of fees. Is not similar action important in connection with childbearing, on which the continuity of family life and civilization depends? That this is so is recognized in

the steps towards the desired end taken in recent years by the Local Government Board jointly with local authorities. Let me enumerate some of these. The Central Authority have undertaken to pay one-half of approved expenditure incurred locally on the following agencies:

(*a*) The salaries and expenses of inspectors of midwives;

(*b*) The salaries and expenses of health visitors and nurses engaged in maternity and child welfare work;

(*c*) The provision of a midwife for necessitous women in confinement and for areas which are insufficiently supplied with this service;

(*d*) The provision, for necessitous women, of a doctor for illness connected with pregnancy and for aid during the period of confinement for mother and child;

(*e*) The expenses of a Centre, i.e., an institution providing any or all of the following activities: Medical supervision and service for expectant and nursing mothers, and for children under five years of age, and medical treatment at the Centre for cases needing it;

(*f*) Arrangements for instruction in the general hygiene of maternity and childhood;

(*g*) Hospital treatment provided or contracted for by local authorities for complicated cases of confinement or complications arising after parturition, or for cases in which a woman to be confined suffers from

illness or deformity, or for cases of women who, in the opinion of the Medical Officer of Health cannot with safety be confined in their homes or such other provision for securing proper conditions for the confinement of necessitous women as may be approved by the Medical Officer of Health;

(*h*) Hospital treatment provided or contracted for by local authorities for children under five years of age found to need in-patient treatment;

(*i*) The cost of food provided for expectant mothers and nursing mothers and for children under five years of age, where such provision is certified by the Medical Officer of the Centre or by the Medical Officer of Health to be necessary and where the case is necessitous;

(*j*) Expenses of creches and day nurseries and of other arrangements for attending to the health of children under five years of age, whose mothers go out to work;

(*k*) The provision of accommodation in convalescent homes for nursing mothers and for children under five years of age;

(*l*) The provision of homes and other arrangements for attending to the health of children of widowed, deserted and unmarried mothers, under five years of age;

(*m*) Experimental work for the health of expectant and nursing mothers and of infants and children under

five years of age, carried out by local authorities or voluntary agencies with the approval of the Board;

(*n*) Contributions by the local authority to voluntary institutions and agencies approved under the scheme.

Grants will be paid to voluntary agencies aided by the Board on condition:

1. That the work of the agency is approved by the Board and coördinated as far as practicable with the public health work of the local authority and the school medical service of the local education authority.

2. That the premises and work of the institution are subject to inspection by any of the Board officer's or inspectors.

3. That records of the work done by the agency are kept to the satisfaction of the Board.

Possibly much of the past failure to protect maternity and to reduce the still-births and mortality among infants under a month old has been due to the erroneous assumption that damage to health and life at these times is in the main inevitable. That this is not so for maternal mortality is proved by the great difference in experience of sickness and death for mothers in different social strata and according to the availability of skilled midwives and doctors. There are similar differences locally and socially in the proportion of still-births. Wassermann tests, followed by appropriate medical action, in all instances in which

there have been previous miscarriages or in which for other reasons syphilis comes under suspicion, and subsequent action based on the diagnosis thus secured, would at once greatly reduce maternal and infantile mortality. So also would systematic examination of urine during pregnancy and the ascertainment that in other respects the physical conditions of normal parturition are present. These are adequate reasons for the establishment of ante-natal consultations, which happily are rapidly increasing in England under the stimulus of the Government grants already mentioned.

The further fact that about one-third of the total deaths in the first year after live-birth occur in the first four weeks of life, adds force to my plea for the establishment of these ante-natal consultations in connection with all lying-in institutions and at child welfare centres, where infants and children up to school age will be submitted to periodical medical examination and supervision.

It has been erroneously asserted that the greater part of this early infant mortality is unavoidable; but careful examination of national and local statistics shows that in some places it is twice as high as in others, and examination of the causes of death in the districts with more favourable mortality shows that their experience can be improved. All experienced obstetricians and pædiatricians will agree that, given adequate care of the mother during pregnancy, skilled care by

a competent obstetrician during labor, and satisfactory medical and nursing care in the following month, there can be secured large reductions in the early infant mortality of the first month after birth, as well as in the number of still-births and in the present toll on maternal life.

In early infancy, as in advanced old age, the hold on life is slight, normal and abnormal are soon interchanged, and there is needed not only more knowledge on the part of mothers and nurses, and even of physicians, of the hygienic side of medicine as applied to the physiological life of the mother and her infant, but also personal care and assistance to enable the mother to apply the useful information and advice given by the public health nurse. I lay special stress on this association of counsel and assistance. It is important also that nursing and medical assistance should be so given as not to create a feeling of dependence. In view of the wide provision of medical assistance from public funds which already obtains, I submit that poverty tests in the giving of such assistance should be abolished, or that, at least, the availability of such assistance should be greatly extended. Given the fulfilment of this condition, it will be practicable to enlist the remunerated coöperation of the medical profession in a general provision of medical and nursing facilities, which will secure the early detection of disease of every kind and its prompt

and adequate treatment. Not only so, but the same service can be utilized for the preservation of health by securing the change of habits and customs and conditions of housing or work which are likely to prove detrimental.

I have laid stress on the ideal after which we must, in my opinion, strive. Meanwhile, it is essential that we should not regard the mere removal of ignorance as the *summum bonum*. This is plain when we come into close contact with the facts of life as lived by the greater part of the wage-earning classes.

Has the wife of the wage-earner domestic help such as her well-to-do sister possesses? Is there a nurse to help her even when the children are sick, much less while they remain fairly healthy? How often has every kettle-full of water to be heated separately on a stove? Under such circumstances is it reasonable to expect the cleanliness which is an indispensable condition of health? Is there a clean supply of milk for every working-man's family and are there arrangements for sanitary and cool storage of food in his dwelling?

And so we might go on multiplying questions, knowing that, if the answers are well-informed and candid, they will confess that the mothers of the wage-earning classes, especially in our large cities—in England, if not also here—have not a fair chance to keep themselves well, or to rear a healthy and robust family.

I do not wish to stress this view of the case; but I have said enough to justify the action of the British Government in deciding during the war—and announcing the fact in more than one official circular issued to all Local Authorities by the Local Government Board—that, next to the active pursuance of war, measures for promoting maternal and child welfare ranked next in importance, and that no efforts must be spared to continue and extend such measures. And the history of the last four years shows that this has been done. The central grants for special maternal and child welfare work undertaken by local authorities and voluntary agencies have increased twelvefold, the number of health visitors has been more than doubled, and the number of maternity and child welfare centres has increased five-fold; and coincident with these facts, infant mortality, which was falling before the war, has continued to decline steadily during the war,—the corrected figures for the years 1912–17 respectively were 104, 117, 113, 111, 98, and 94—although the number of mothers employed away from home has greatly increased during the same period.

The Work of Voluntary Agencies

I have several times in this address mentioned the valuable work of voluntary health agencies. No official can fail to recognize that pioneer work is commonly started by them; and it has often happened that

only when the evidence of its value has become obtrusive has it been taken over by local authorities. This is the true function of voluntary agencies, and will remain so, until local authorities (which after all are manned by voluntary workers) become saturated with the ideals of voluntary workers and of the new women-voters. Local authorities always have one great advantage over voluntary societies, that their action can be supported by legal powers.

The proper attitude of voluntary workers is to initiate and demonstrate the value of reforms, to persuade local authorities to adopt them, themselves to become members of these local authorities to ensure this end, and thus eventually render the voluntary organization for the object in question superfluous. There need be no fear; openings for further desirable voluntary work will always appear, as official work increases. In the main, however, the care of the health of the people is a governmental function, whether it has to do with the prevention of sickness or the satisfactory medical treatment and nursing of the sick.

There is no early prospect of voluntary workers becoming unnecessary; for average human nature, as represented on governmental bodies, is shortsighted and needs much education, morally and intellectually, before it will undertake the whole sphere of work called for in the interest of the welfare of the mother and her child. Hence my plea that the magnificent

potentialities of the Red Cross organization should not be allowed to fall into abeyance; that they should replace their relief work by preventive work; that, to use a well-known simile, they should erect a parapet at the top of a dangerous cliff as well as provide ambulances at its foot. In so doing they will, I am confident, not encroach on present successful work of existing bodies concerned with promoting child welfare, or with the prevention of tuberculosis or of venereal diseases, or with existing agencies for providing nurses for the poor. But they can supplement the efforts of these organizations; they can bring monetary as well as personal assistance; and they can, above all, bring a mass of public opinion to bear on local and central governing bodies which will lead to the only real economy, which consists in expenditure on an adequate scale, bringing to the aid of the families of the people the preventive, the medical, and the nursing facilities of which they remain in need.

CHAPTER VI

The Inter-relation of Various Social Efforts[1]

On examining the local city directory, one cannot but be impressed by the multiplicity of voluntary organizations having for their object the immediate relief of destitution or the social or economic "uplift" of sections of the population. The multiplicity of these agencies becomes more striking when one remembers that probably every one of the hundreds of churches and chapels in the city has its periodical sacramental and other collections for the poor, and may have also a system of parochial district visiting, with such auxiliary assistance as is provided through mothers' meetings, etc. Nor does this exhaust the possibilities of social help available for the poorer members of society in cities in which there is a satisfactory distribution of rich and poor, that is, in which the segregation of different social strata in separate areas has happily not befallen. There is the further help provided by individual charity, the amount of which in the aggregate probably exceeds beneficence through churches and social agencies.

[1] An address to the Alpha-Kappa-Kappa Club, Johns Hopkins University, Wednesday, December 10, 1919.

If these different agencies could pool their resources, while retaining the enthusiasm and driving power of separate organization, what an economy of effort and what increase of efficiency would result, especially if these agencies were also satisfactorily related to the official organizations of local and central governing bodies having the same object!

But I am not concerned this evening to discuss the machinery of social help or the attempts already made in different centres for securing their satisfactory co-operation. Nor am I disposed to discuss the economic problems underlying the need for social assistance of the poor. Ideally we must agree with St. Augustine's statement: "Thou givest bread to the hungry; but better were it, that none hungered, and that thou had'st none to give him." My present object, however, is to set out some elementary—and when stated fairly obvious—considerations bearing on social evils and their remedies under present conditions of society, the recollection of which if followed by practical action, would secure greatly increased efficiency in social work.

For the following reasons I do not hesitate to bring this subject before a gathering of graduate medical students:

First.—Every physician as soon as he engages in medical practice almost immediately comes into touch with organized and unorganized social workers, and

his success—personal as well as communal—can almost be measured in terms of his outlook towards their work;

Second.—The physician, with his scientific training in the tracing of effects back to their causes, is in a specially favourable position to promote rational as contradistinguished from empirical social help; and

Third.—The physician is now learning to appreciate that he can only treat his patients satisfactorily in the light of knowledge of their social, including housing conditions, of their industrial relationships, and of their personal history and habits of life.

This is the age of anxiety to give social help.

I hold strongly the view that ere many of you are advanced in years the fundamentally important social help which is constituted by adequate medical attendance will be provided, for all who wish to have it thus, at the expense of the state, i.e., coöperatively by means of common charges on every member of the community according to his means, exactly as elementary education is now provided. This will involve radical reconstruction of the relationship between hospital and private medical practice, and will, I trust, include also the introduction of preventive medicine into the practice of every physician. But this is in the future. How can medical practice under present conditions, and how can non-medical social agencies, be made subservient to the fullest extent to the welfare of the community?

A few elementary illustrations will show the many unexploited or only partially exploited or misused opportunities for efficient social help.

The greatest science is to know the causes of things; and there is no branch of work in which this is more important than in medicine. But causation is complex. A given result commonly follows from a chain, or it may be a bundle of events: and as we shall shortly see the end links of the chain are oftimes joined, thus forming a circle.

If a man shoots a companion with whom he has quarrelled, it may be urged that a more rigid system of license for the use of firearms would have prevented the calamity; that the companion was also quarrelsome; that the homicide had been the spoiled child of his mother and had not had a satisfactory up-bringing; and that he inherited from his father a violent temper; but none of these circumstances,—all of which may have contributed to the murder,—is likely to succeed in preventing the murderer from being hanged after due trial.

It would be difficult to find a more striking instance of the linking of elements in causation than in the origin of a case of malaria. For the transmission of this disease two human beings, one already infected with the specific contagium, and a mosquito are required, and the chain of causation can be broken at the infecting person, by strict screening from mos-

quitos, and by the use of quinine; at the mosquito by preventing its emergence from the larval stage, and later by preventing its access to the patient; or at the prospective patient, possibly by prophylactic medication, more certainly by strict screening from mosquitos. Hence one might claim lack of segregation of infected persons, lack of screening of the healthy, failure to drain marshes, to apply oil to the surface of stagnant pools, or to adopt allied measures destroying the larvae of mosquitos as each of them the cause of malarial disease.

There is a constant excess of sickness among the poor as compared with the well-to-do. Measures for the relief of poverty, therefore, may be regarded as within the scope of the physician's prescription. This may be accomplished for the moment by monetary or material help; but unless the causes of poverty are sought out and counteracted, the assistance given is merely palliative. For nothing is more certain than that poverty tends to become a self-perpetuating condition.

Thus poverty leads to premature employment of children, with detriment to their normal growth, followed by diminished efficiency in adult life. This implies low wages throughout life, and so poverty is passed on to a second generation.

Evidently timely assistance to induce the parent to delay employing the boy, until he has been prepared

for work, and to ensure his being put to work which will not be a "blind-alley" occupation, might have obviated the evil chain of events.

Poverty again when carried to the point of destitution may tempt to larceny; this may be followed by loss of employment, and so the temporary unrelieved poverty is liable to become permanent.

Intemperance has been almost wiped out as a cause of disease in the United States; and we have in the fact that the whole country has "gone dry" a remarkable example of a "short-cut" towards social salvation from alcoholism which will be most instructive. Apart from such universal prohibition of alcoholic beverages, the physician has to think of an alcoholic patient under his care as the possible victim of one or more or all of several coöperating influences conducing to intemperance. The alcoholic habit may have been gradually acquired as the result of protracted social indulgence in moderation acting on a person of unstable mental constitution; it may, especially in wage-earners, have been hastened by the evil custom of treating. It not infrequently follows overwork, with the associated feeling of need for stimulants; it accompanies bad housing, with unsatisfactory sleeping accommodation; and it is aided by poor and badly cooked food, due to shiftlessness, overwork, or lack of domestic training of the man's wife. If there is to be successful control of alcoholism, action in all the directions briefly indi-

cated above, and in other directions which will suggest themselves, is necessary; and although the physician cannot himself do all this, his efforts should run parallel with social efforts in these directions.

Even when the "short-cut" of compulsory abstinence has been taken, the efforts indicated above are still needed; for alcoholism is not the only resultant of bad social habits, of overwork, of unsatisfactory feeding, of deficient sleep, and so on.

Perhaps even more far reaching in their evil effects than intemperance are the Venereal Diseases. As you know, special efforts during and since the war have been made to limit the spread of these diseases. I do not propose to trouble you with statistics to prove the mischief caused by these diseases. Has not Osler said that the whole of clinical medicine can be taught around syphilis, and that it is the third in importance of the killing diseases? And as a further illustration, let me add that no less than one-tenth of the total accommodation in our lunatic asylums might be dispensed with if syphilis were eliminated.

Among the measures being taken to combat these diseases are educational propaganda, and the provision of clinics, free for all, at which patients may be treated promptly and adequately. It is evident, however, that if the medical and educational efforts now being made are to succeed they must include recognition of all the factors causing sexual vice, and appropriate action in

respect of each of these—they must indeed go further than this; for self-restraint is a wider problem than in relation to exposure to these diseases. It embraces the whole subject of formation of the habit of self-control. One of the most striking facts in the great war has been the extent to which young girls of previously decent behaviour have fallen victims to what has sometimes appeared to be passion combined with a perverted form of patriotism; and one of the measures most called for is better mothering and maternal training of both girls and boys. The problem is one of special difficulty as regards the economically independent girl; and to shield her the combined efforts of home influence, of girls' clubs, and of various social and religious organizations are all required.

Judicious and restrained teaching of the physiology and hygiene of sex would do much to counteract the evil influence of bad teaching by companions; and in emphasizing this duty on parents the physician may do untold good. So also, especially when the daughters of his patients are about to marry "men of the world," he should urge the need for asking a satisfactory certificate from the intended bridegroom of freedom from infection.

The influence of unaccustomed alcoholic indulgence in leading to the first "slip," often with the production of life-long disease, is well known.

Nor must we leave out of account the tolerance of

vice in conversation between young men, as a frequent excuse of and even excitant to vice. The happiest young man is he who can go to the marriage ceremony with the same sexual purity as is even now expected from the bride. Is it too much to expect that our social conscience will grow up to this standard? I think not; and when this point has been reached, venereal diseases will have almost entirely disappeared, and the sum total of human happiness and efficiency will be enormously enhanced.

Meanwhile partial remedies must be pushed for all they are worth—and this is much. Fear of consequences may deter some from vice; fear of consequences to future wife and child form a much more potent argument. Treatment of venereal diseases, especially of syphilis, is a most valuable means of preventing their spread. This treatment may be urged even at the stage after exposure to infection before any symptoms of illness appear; and the more promptly this is done the more successful is it. There has been much heated debate as to whether persons known to intend to expose themselves to possible infection should be provided with disinfectant or other arrangements for obviating infection. This cannot be done without some loss of moral position; it almost makes the provider a co-partner with the sensualist. It may be urged, however, but with dubious cogency,

that if the man is told beforehand that immediately afterwards he can have access to disinfectant provisions, the same objection holds good. I do not regard the provision of "outfits" as wise. Evidence tends to the conclusion that they are commonly not used efficiently; and there is a distinct loss in the moral position by their use. The whole subject is one of great difficulty. The prevention of venereal diseases is clearly, however, not merely a medical problem; and the physician who realises this and throws the weight of his influence, in warning and in counsel, on the side of moral restraint, is adding greatly to the value of his social service to the community.

Other instances will occur to you, illustrating the importance of a broad outlook in the causation of disease or other forms of social misery. I will adduce one more. It is well known that infant mortality is much heavier among the poor than among the well-to-do. The rule does not hold universally in rural areas, but in towns it applies almost without exception. And it is assumed by a large school of social workers that enlightenment of the ignorance of the poor mother will effectively correct this evil. Such a lop-sided view ignores many of the elements of the problem of infant mortality. Think for a moment of the contrast between the working-class mother of five children living in a small city tenement, and the mother of an equal number of children in easy circum-

stances, living in a residential suburb, and having domestic servants, a nurse, and a physician always available. The two mothers probably differ but little in their knowledge of the hygiene of infancy; but the one has helpers to ensure scrupulous cleanliness, to prevent over-fatigue of the nursing mother, to detect the first sign of infantile illness and provide the needed action; while the other mother has to struggle alone in respect of her infant, without either domestic or nursing assistance, the struggle being complicated by the fact that the care of four older children and of her husband is on her shoulders. Even when there is no actual direct poverty in the working-class home, the differences thus indicated—supplemented by the inability of the mother to obtain medical advice for apparently minor ailments—outweigh enormously the factor of ignorance as a cause of excessive infant mortality. By all means let instruction be given by public health nurses or other agencies, and this is most valuable; but it does not fully meet the needs of the case. There is required also actual domestic, as well as nursing, assistance in the home of the overworked working-class mother, especially after the birth of her infant and when illness attacks any of her children; and unless the physician realises these elements in the problem, his efforts in securing the welfare of his patient and in reducing infant mortality can have but partial success.

The main lessons arising from the foregoing illustrations of medical and social problems are two: Each evil should be attacked in its causal relationships; and causation is multiple.

Hence—apart from total prohibition—in attacking alcoholism, the physician may bless the efforts of teetotal advocates, of those engaged in reducing the number of saloons, of those securing better dietetics and cooking, less industrial fatigue, or more satisfactory domestic sleeping accommodation, and of parents and teachers engaged in promoting self-control in the young as a habit of life; and he will call them all in aid of his curative and preventive life work.

So, also in the control of venereal diseases, early and prompt diagnosis and treatment must go hand in hand with police measures for the suppression of prostitution, with educational work respecting these diseases, and with the inculcation of a higher standard of morality, considered as part of the general cultivation of moral self-restraint.

And in the prevention of infant mortality and of the even more serious handicapping of the up-growing child produced by the factors of infant mortality, we need to bring to bear all our medical and hygienic knowledge, and to realise that until every mother in the land is furnished with the elementary requirements, domestic, sanitary, social, and medical, for rearing a healthy family, we have no right to mental com-

fort while enjoying these elementary needs of family life ourselves.

Coöperation and solidarity of effort are needed on the part of the multitude of workers engaged in social work for the community—official and non-official; and in bringing this about the physician of the early future will, I am confident, take a leading part.

CHAPTER VII

The Obstacles to and Ideals of Health Progress[1]

There are two ways in which Health Problems can be approached: what may be called the microscopic method, which examines in minute detail each individual problem; and the conspective method, in which an attempt is made to obtain an unbiased and comparative view of the chief problems concerned, in order that their relative importance may be assessed, and the possibilities of improvement may be gauged. In proposing to myself the latter and more difficult task, I appreciate the impossibility of discussing all the items which emerge.

I would not have us forget what has already been achieved. Taking the national figures for England and Wales as an illustration, it is noteworthy that the death-rate from all causes fell from 22.4 per 1,000 of population in 1846–50 to 13.8 in 1911–15, a reduction of nearly 40 per cent. Comparing the decennium 1871–80 with the quinquennium 1911–15, the incidence of reduction of death-rate at different ages was as follows:

[1] A lecture given to the Alumni Association of the University of Yale, January 22, 1920.

Percentage reduction in death-rate

Age		Age	
0– 5	42	35–45	42
5–10	48	45–55	25
10–15	43	55–65	15
15–20	46	65–75	10
20–25	51	75–85	7
25–35	50	85 and upwards	15

The survey is saddened by the terrible losses of War, and the even more devastating ravages of influenza; and we realize our inadequacy to prevent catarrhal infections, until further research into preventive possibilities proves successful, and until the standard of universal conduct for catarrhal affections becomes much higher than at present. We realize furthermore that probably at least half the deaths from all causes which occur could be postponed until old age. But the standard of health of the general population has greatly improved; typhus has practically disappeared under peace conditions; yellow fever approaches its demise; malaria and typhoid are controllable; tuberculosis and venereal diseases are only waiting for systematic, complete, and continuous measures to secure their rapid decline or actual disappearance; the mortality from childbearing and of young children has greatly declined; and this is an incomplete statement of what has already been done.

Obstacles

This improvement is all the more remarkable in view of the additional obstacles imposed to health improvement by modern conditions of urban and industrial life.

Urbanization

The population during the last century has steadily flocked to the towns from country districts. Streets have taken the place of green fields; rows of unsatistory dwellings have replaced country cottages; we have dust and belching smoke and noise instead of sunshine and country air and quiet; bustle and turmoil instead of life in close touch with mother-earth: and this change has been associated with an almost unlimited inter-communication of human beings, and a corresponding increase in opportunities for the convection of germs of disease.

Until the time of the industrial revolution in England modes of locomotion were little if any more advanced than among the ancient Egyptians; and disease, when it travelled at all, travelled by slow and deliberate stages. Now the infections of the entire world may be sampled in any one district in the course of a few weeks. Man has, in fact, reverted from the land-tied condition involved in agriculture to the migratory habits of an earlier period of man's life on the earth. As Wells has put it: "in every locality . . . countless people are delocalised," and it is not the least evil of

urbanization that, in consequence of this, the administration of local affairs falls too often "into the hands of that dwindling moiety which sits tight in one place from the cradle to the grave," or of persons who have a financial axe to grind.

The difficulties of water supply, of scavenging, and of drainage, until they were overcome, have made towns the inevitable destroyers of mankind. The conditions of housing are worse in towns than in country districts, higher rents and less ground space implying that each family on an average lives in fewer and more crowded rooms than in rural districts.

Furthermore, in towns there is greater difficulty in securing satisfactory arrangements for the storage of food, especially milk, and in obtaining fresh milk and vegetables; and there is the serious disadvantage, especially for children, that their playgrounds are in streets instead of the fields, and that the possibilities of deriving infection from dried expectoration and from fæcal or other organic contamination in yards and backstreets as well as directly from other children or adults are multiplied manifold.

Even more important, town life for the father of a family generally means an indoor and often a dusty indoor occupation; the mother not infrequently is also industrially employed; and these adverse circumstances, so far as they are allowed to continue, now affect three-fourths of the population of England and

Wales and probably one-half of that of the United States.

And yet the death-rate from all causes, and especially from communicable diseases is steadily declining, to an even greater extent in urban than in rural communities.

It is but fair to add that the differences between urban and rural populations tend to decrease; at least this is so in England; probably the same is true to a less extent in America. The nominally rural population is becoming more and more urban in character, and composed not solely of rustics,—who live in and by the soil and are altogether more natural in their habits,—but largely of town-dwellers who only sleep in country dormitories. But this makes it all the more remarkable that notwithstanding the multitudinous circumstances which have tended to increase disease, the death-rate has been lowered to an amount already indicated, and life has been prolonged to an extent which has secured an increase in its average expectation of 10 or 11 years within the last thirty years.

Industrialism

Considerations of time render it impracticable to discuss in this address the mischievous influence of modern industrialism on national health. This influence runs collaterally with that of urbanization; and in it in the past can be seen the evil results of over-

work, of dust inhalation, of chemical poisoning, of industrial infections including tuberculosis, and of the general depressing effect of protracted monotonous work. The evils of industrialism like those of urbanization are happily being in a large measure counteracted.

Poverty

The problems of industrialism in relation to health cannot be adequately discussed apart from a consideration of the remuneration for work, which necessarily depends on the power of the worker to strike a satisfactory bargain with his employer, and the extent to which he can ensure regular employment. If these conditions cannot be fulfilled, or if the breadwinner is dead or disabled, poverty results, using this word here in the sense of inability to provide for the personal and family essentials of health. And here we are at once faced with the problem of relation of population to means of subsistence. Malthus in 1798 advanced the pessimistic hypothesis that poverty is the inevitable result of increase of population, which entitles him to be characterised as the Schopenhauer of Political Economy, as Schopenhauer was the Malthus of Philosophy. Without attempting detailed discussion of Malthus's hypothesis, it is clear that the wealth of the population depends upon

1. The amount of food produced,
2. The amount of materials produced,

3. The efficiency in preparation of these materials, and
4. Convenience of transport.

In all these particulars means of subsistence, considered internationally, have during the last century grown more rapidly than population; and now, whether we like it or not, a new element has entered into the problem in this and several other countries,—voluntary control of births,—necessitating the estimation of future growth of population on a radically different basis from that of the past, and banishing the fear of poverty as the result of too large a population.

It may even become necessary to adopt some method of national remission of taxation or subsidisation of wages in accordance with size of the family, not only in France, but hereafter in England, if in England, as already in France, the voluntary control of births is practised to an extent resulting in a stationary or even a decreasing population. In America the possible need for such action will not arise for several generations, during which, however, unless the present trend of events is changed, Roman Catholics appear likely largely to replace Protestants, and the Slavonic and Irish to preponderate over the Anglo-Saxon elements of the population. It is possible, of course, that in another generation the Roman Catholic Church may not be able to continue its ban on birth-control, and that the more "backward" (?) races will adopt similar devices, including even the Japanese and the Chinese.

The Malthusian Hypothesis

(*a*) The Malthusian hypothesis has been held to justify the *laissez faire, laissez aller* policy which held the industrial world in its malignant grip during the latter part of the eighteenth and the earlier part of the nineteenth century, and from which we are not yet completely freed. Workers were exploited and reduced to a position of modified slavery; and this was assumed by clergy and political economists alike to be part of the ordered course of life. This doctrine was made to support the belief that God had ordained the poor man's lot, with its attendant misery and hopelessness.

On page 438 of the sixth edition of his book Malthus says:

> that the principal and most permanent cause of poverty has little or no direct relation to forms of government, or the unequal division of property; and that, as the rich do not in reality possess the power of finding enployment and maintenance for the poor, the poor cannot in the nature of things, possess the right to demand them, are important truths flowing from the principle of population.

In the first edition of his book a more extreme, plainer statement of the position, as assumed by Malthus, was given, but was omitted from later editions (the extract is translated by Beale from a French edition):

> A man born into the world already occupied, if his family can no longer keep him, or if society cannot utilise his work,

has not the least right whatever to claim any share of food, and he is already one too many upon the earth. At the great banquet of Nature there is no cover laid for him. Nature commands him to go and she is not long in putting this order herself into execution.

Malthus supplied the clue which helped to start Darwin on his epoch-making investigations; and to the present day there are men who do not appreciate that the mutual aid which is fundamental in human society is an enemy to the continued operation of natural selection, and that we cannot revert to natural selection without destroying the characteristic work of civilization. To think otherwise is the secret behind German aggression; to act otherwise is to revert to barbarism. Man has definitely replaced natural by rational selection, and will, I have no doubt, to a steadily increasing extent replace competition by coöperation.

(*b*) The Malthusian hypothesis and the policy based on it ignored the human element in industry. Happily revolt against the strict application of the *laissez faire* policy set in soon after urbanization and industrialism (under the then conditions) began their maleficient work, first in regard to children, then for women, and latterly more general in character.

Nothing is more conspicuous in recent years than the growth of sensibility on the subject of economic evils, especially as to the conditions of industry. Economic efficiency, as a sole object, appeared to preclude regard to morality of method, and the result has been

poverty for the masses of mankind. If this is to cease, satisfactory minimum standards of comfort and welfare for the entire population must be accepted, which will form a first charge on industry. This can only be hoped for when there is complete practical acceptance of the fact that "we are members one of another," and servitude is completely replaced by the ideal of mutual service.

(*c*) The Malthusian hypothesis ignores the great though paradoxical truth, that although under circumstances permitting malnutrition and defective training, large families spell poverty, especially when population is not distributed where it is needed, the real wealth of the world after all depends on man himself. Nature gives him little that he can use in the form in which he finds it. It is by him and by him alone that "wealth" is created by converting useless into useful matter.

It appears to me clear that over-population need not excite apprehension; that population in itself is the only means by which national wealth can materialise; and that our chief aim in securing national efficiency must be to train each unit of the population adequately for work, and to prevent the terrible loss of efficiency due to avoidable sickness.

And this brings me to the direct statement of the truism that health progress can only be secured by preventing preventible illness.

Poverty and disease are allied in the closest relationship; and while it is true that the removal of poverty would effect a great improvement in national health, it is even truer that the prevention of illness forms the most important means for the avoidance of poverty.

In various reports it has recently been shown that in a number of districts an inverse correlation exists between infant mortality and the amount of the family income; the implication appearing to be that increase of the lower income is the best and perhaps the only method for obviating excessive loss of infantile life.

In such an argument poverty evidently is considered as an element, instead of as a highly complex phenomenon needing to be further analyzed into its constituent parts. In the instance quoted, the fact that the correlation between poverty and high infant mortality is not essential can be shown by examples of low infant mortality in communities in which poverty is the rule; by examples of high infant mortality in which wages are high; and by other examples of communities in which high infant mortality has been lowered without any change in economic conditions.

The social conscience cannot be satisfied until every family has an income sufficing for all its essential needs; but there are possibilities of successful attack on infant mortality which can be pursued when economic change is not within reach, and when such economic change would not obviate the need for further

measures. Among such measures may be mentioned the abolition of alcoholism, the provision of a pure and adequate milk-supply, increased attention to domestic and municipal sanitation, health teaching by public health nurses, and prompt and adequate medical and nursing assistance when required.

Ignorance

It may have surprised you that I have not placed ignorance in the forefront, before industrialism, urbanization, and poverty, as the chief enemy of personal and public health. I have no hesitation in making the statement that although there is need for large additions to present educational work in hygiene, the utilisation of existing knowledge by those holding responsible positions is even more important. Is it not true that it is easier to promote educational "drives" for any single branch of health education, than to obtain money for the actual execution of health work?

Let us look more critically at educational work in hygiene. Whose ignorance is it proposed to enlighten? Ignorance is common to all classes, and it is fundamentally important that systematic instruction in physiology and hygiene should be given in all our schools; and that especially every teacher should have adequate training in these subjects, and in the recognition of the common mental and physical defects of children. If

a course of instruction were given for all, approaching that which is given for public health nurses at Yale University, how much more hopeful would be the prospect of public health progress, both in New and Old England. But this does not cover the entire needs of the case. Consider, for instance, the relation of maternal ignorance to excessive child mortality.

Maternal ignorance is sometimes regarded as a chief factor in the causation of excessive child mortality. It is a comfortable doctrine for the well-to-do person to adopt; and it goes far to relieve his conscience in the contemplation of excessive suffering and mortality among the poor.

This doctrine has found favour in occasional official reports and in miscellaneous addresses. It embodies an aspect of truth, but it is mischievous when it implies, as it sometimes does, that what is chiefly required is the distribution of leaflets of advice, or the giving of theoretical instruction as to matters of personal hygiene.

There is little reason to believe that the average ignorance in matters of health of the working-class mother is much greater than that of mothers in other classes of society. Furthermore, it would appear that working-class mothers give their infants the supremely important initial start of breast feeding in a larger proportion of cases than do the mothers in other stations of life.

The mothers in both classes may be ignorant; in both there is deficient training in habits of observation, especially in regard to the beginnings of illness; but the mother in comfortable circumstances is able to ensure for her infant certain advantages which the infant of the poorer mother often cannot obtain. What are these?

1. The well-to-do mother is commonly able to devote herself to her infant and have assistance in this duty; the working class mother is single-handed, and has also to perform, unaided, all the duties of her household, including the washing and cooking for her husband and herself and possibly for several children.

2. The well-to-do mother is commonly able to ensure that the milk for her infant is purchased under the best circumstances, is stored in a satisfactory pantry, and is prepared under cleanly conditions. The working-class mother often is supplied with stale, impoverished milk, may have no pantry, and, except when suckling her infant, is handicapped at every stage in the cleanly preparation of her infant's food.

3. If the well-to-do mother is ill, adequate medical and nursing assistance is at once available, and the child's welfare can be safeguarded; if the working-class mother is ill, the child usually must suffer with its mother.

4. If the child of the well-to-do mother falls ill, everything that good nursing and medical attendance

can furnish is commonly at once available; for the child of the working-class mother the state of matters is remote from the ideal. Facilities for obtaining medical attendance and nursing vary greatly in different districts; but in none are they satisfactory for the poor, and especially for the classes who have limited incomes, but do not as a rule receive skilled hospital treatment, or avail themselves of help from nursing associations. Prompt medical assistance at home commonly cannot be afforded for children of wage-earners, and particularly not for the children of unskilled workers.

5. Infants and nursing mothers are very rapidly influenced by their environment. This environment is complex. The mother is the main element in the environment of the infant. If she is over-worked and suffers from chronic fatigue her infant must suffer; directly, because the mother's milk under these circumstances is liable to be scanty or impoverished or otherwise unwholesome; or indirectly, owing to her being unable to give sufficient attention to her infant. The infant of the well-to-do mother is less likely to suffer in either of these ways.

6. Not only are the milk supply, and the storage and preparation of artificial food, important parts of the environment of the infant, but so also are the housing conditions of the family, and the sanitary conditions of the back-yard and of the street in which the house

is situate. The superiority of the circumstances of the one mother and infant over those of the other in these respects is obvious.

There is no reason to assume that the one mother is more ignorant than the other. But the ignorance of the working-class mother is dangerous, because it is associated with relative social helplessness. To remedy this what is needed is that the environment of the infant of the poor shall be levelled up towards that of the infant of the well-to-do, and that medical advice and nursing assistance shall be made available for the poor as promptly as it is for persons of higher social status.

The assistance given will include advice, but it will be the advice which a medical practitioner gives to his patient; which a health visitor or public health nurse gives as to personal hygiene; and which a sanitary inspector gives to a householder. It should include also the advice given by a trained midwife or midwifery nurse, who is in a favourable position to secure the adoption of her advice by the mother. Such advice is becoming available to a steadily increasing extent, but in some industrial towns a majority of midwives and midwifery nurses are still untrained women, who are not competent to give the best advice.

I would not have it assumed that I do not attach high values to the teaching which the physician gives to his patient and the public health nurse to the healthy

mother and infant; but unless this is combined with assistance to provide the necessary means to health, whether this be hospital treatment, home nursing, pure milk, improved domestic conditions, or help to the over-tired mother, the advice falls far short of its potentialities for good.

There is need for further instruction of the public in all branches of hygiene; and we need, if we are to be efficient in social work, to follow the advice of Oliver Wendell Holmes, to remove the intellectual *membrana nictitans* from our eyes, and to consider the physical and moral as well as the intellectual obstacles to health.

In the cultivation of communal health

Defects of Character

are even more pernicious than lack of knowledge. No member of any of our local authorities can fail to have been warned that typhoid fever is still being spread in many communities by impure water, and as the result of inadequate hospital isolation of cases. The means of prevention of tuberculosis are well known; but how few local authorities will face the problem of supplying adequate funds for clinics, for examination of contacts, for hospitals for bed-ridden cases, and for convalescent homes; and how few are willing to give help to ensure that the consumptive

patient has a separate bedroom? In how few instances are the regulations against indiscriminate expectoration enforced, and how seldom are physicians called to account for not obeying the law as to prompt notification of cases of tuberculosis? Will all the "drives" against tuberculosis effectually remedy this condition of things? Would not public opinion amply support *the one "drive" which, above all others, is necessary:* a systematized effort on the part of all social workers to exact a definite promise from every candidate for local or state office that he will give earnest support to all well-considered anti-tuberculosis measures, for the diminution of venereal diseases, for improving the welfare of mothers and their children, for promoting school hygiene, and for improving the housing of the poor. Democratic Government, alas! hitherto, has meant government by active minorities. The great danger of democracy is that the minority may and often does consist largely of persons having a mercenary interest in the machinery of local government. Why should not it become an active and preponderant minority of health gospellers? This will involve the taking of infinite trouble to overcome the multiform activities associated with "political pull"; it will involve the watching of the record of each elected person, merciless exposure of those who do not whole-heartedly support reforms, and systematic effort to prevent the reëlection of all whose record

proves unsatisfactory. Are we equal to this task? Is our national and local patriotism equal to this heroic test, involving most prosaic work, the surveillance and the "besting" of the politician? If not, our indirect attack on the enemy by means of special educational drives can have relatively little effect. Where the enemy is, there our fight should be; and the chief enemies of health are local authorities possessing powers to secure health for the community, who corruptly or parsimoniously refrain from their duty. Nor can we avoid responsibility, or the need for strenuous effort after efficiency by not taking part in official or voluntary administrative work. We may have sufficiently good reasons for this abstinence; and onlookers have their rôle in life. If all were authors, where would be the readers? There are many indifferent writers who would be appreciative readers, and the same remark applies in local administration. Appreciation is necessary as well as a subject to be appreciated; and the onlooker at social work may be most helpful. If he is to be helpful he must be kindly and charitable, as well as watchful. Rancorous and ill-informed criticism must be avoided, and the onlooker must be ready to do justice to good work, or attempted good work. Nothing has made it so difficult to secure good men to undertake the burden of local government as the undiscriminating and uncharitable criticism aimed at those engaged in it. Criticism of representatives has

often been deserved; but critics are too often those who will not aid to the slightest extent in the work which, often without sufficient knowledge of the facts, they villify. When we read of administrative scandals, it is desirable to have a sense of proportion, and to remember, as the reader of old records or even of Pepys' diary will scarcely need to be reminded, that corruption was rampant in the past, and especially to remember that the best way to remove that most subtle and mischievous form of corruption which consists in giving and accepting appointments as political rewards, is by ourselves taking a part in local government, or by steadily upholding those who are doing so with integrity.

The onlooker, then, has his duty to perform as well as the administrator. He cannot do his duty unless he intelligently studies local administration, even though he takes no part in it. A chief need is this interested study of the phases of local administration by the general inhabitants of each district. Happily there are indications of the increasing local patriotism which such study implies. The exact knowledge thus acquired is the best means of neutralising much of the ill-natured, because ill-informed, criticism with which the founts of local administration are too often fouled. A high moral ideal on the part of onlookers as well as of administrators is needed if we are to secure that high standard of social efficiency which is

an indispensable condition of the further triumphs of preventive medicine now waiting to be secured.

Ideals

In my discussion of the difficulties of health progress, I have evidently encroached here and there on the second division of my lay sermon. Let me now attempt to state more systematically some ideals of health and means for their realisation.

Intelligent human society, permeated more than we realise by the essentials of Christianity, has already gone far in securing remedies, notwithstanding the too frequent other-worldliness or lack of vision of those who should have been foremost in rebuilding Jerusalem in this green and pleasant land. Industrialism no sooner huddled together labourers and their families in the courts and alleys of insanitary towns and overworked them for scanty wages, than the voices of such philanthropists as Percival, Oastler, Shaftesbury, Owen, and of many others were heard in favour of interference with that freedom (!) of contract between workers and employers, which the professors of the dismal science regarded as a fundamental principle in political economy. And so gradually, too slowly, regulated industry, improved sanitation, better housing, the isolation and hospitalisation of infectious cases, the readier access than in rural districts of all

sick to skilled treatment, higher wages, better food began to counteract the evils of industrialism and urbanization. Communal action was taken in the regulation of industry, in the promotion of sanitation, in providing elementary education; and the result is seen in the remarkable fact that, notwithstanding its enormous handicap, urban life has become almost as safe as rural life, so far as life itself is concerned, though not in standard of health.

The first lesson, then, which has already been partially learnt, is that *no member of a community can live to himself*. We now believe in the solidarity of society; that the sores of one section of it means peril for all. And we are gradually learning to appreciate that this is true not only in respect of the acute infectious diseases, and of chronic infectious diseases, such as tuberculosis and syphilis, but of every disease and of every other factor in life which causes individual inefficiency, and which consequently inflicts additional burdens on the competent section of the community. I do not wish to underestimate the basic self-centredness, if not actual selfishness, which, to a varying extent, is part of the nature of all of us; but in industrial, as in other social problems, whatever may be the intermediate turmoil and misunderstandings and disturbance which appear to loom so threateningly, it is plain that the mere cash nexus of relationship is becoming more and more entagled in a moral nexus; and that a

prophet's vision is scarcely needed to forecast a future of consolidation and conformity of efforts of employers and employed such as has never yet been generally realised. In such a consolidation the idea of servitude will disappear, and mutual service will take its place. This will happen by the growth of an idealistic standpoint; even more, perhaps through motives of community self-defence.

Secondly, the Great War, though the most terrible calamity to humanity of the ages, has brought out a most comforting and elevating thought. *Our brothers and our sons,*—and our daughters also in a multitude of munition and other works,—have proved that, under the overwhelming moral compulsion of national need, they *are willing and ready to lay down their lives for great impersonal things,* and in their hundreds of thousands they have done so. Coincidently with this, a great impetus has been given to work for the health and welfare of the civilian population, and especially of mothers and their children. The removable horrors and losses of peace, in the aggregate, are greater than those of war. Cannot an equal spirit of sacrifice be induced against these? Is it not possible to evoke a like devotion to secure the triumph of good over evil, of clean administration over political pull, of fair dealing over industrial exploitation, of adequate output over "slacking," of determination to spend and be spent to secure the welfare of all, in peace as in war?

Thirdly, prior to the war, for years, many among us had been realising to an increasing extent the supreme importance of the Mother and the Child, in safeguarding family life, and in securing the beginnings of personal and national health. In past years medical officers of health have been busily occupied in struggling to overcome epidemic diseases, and in attacking the circumstances favouring their prevalence. But for twenty years, at least, the outlook has widened; the physiological as well as the pathological aspects of hygiene have received attention; and it has been realised, more and more, that in the conservation and upbuilding of the health of the infant and the preschool child rests the chief hope of the future; and somewhat more recently, public health policy has directed itself to the protection of motherhood, on which depends essentially the welfare of the child.

This can only be done by ensuring, chiefly through its mother, *for every newcomer on the stage of life, in all essential points, a footing of equality of opportunity, physical, mental, and moral, with all others.*

The ideal that every child should have equality of opportunity is really part of a general upward movement in our national ethical life.

The thoughts of men are widened with the process of the suns.

We begin to appreciate the full significance of the older words, "it is not the will of your Father that one of these little ones should perish"; and this ideal

happily is now certain to replace the materialistic doctrine of the German type which drives the weaker to the wall.

Progress has been slow; but when we recall how true it was in St. Paul's day that "the whole creation groaneth and travaileth in pain together until now"; and how gradually through the ages the mass of human suffering has been abated, we can, while regretting the slow rate of progress, gain encouragement for more rapid future advance. The abolition of slavery, the higher position of women, the steadily increasing force leading towards one standard of sexual morality for both sexes, the improved conditions of housing and sanitation notwithstanding the impediments of urban life, and the increasingly humanitarian conditions of modern industrialism, all give us reason to lift up our hearts.

There have been three stages in the attitude of mankind to altruistic work. The first of these is illustrated by the attitude of the father who said to his son: "Learn, my son, to bear tranquilly the calamities of others." Is not the second stage, illustrated by the sleeping disciples in the Garden of Gethsemane, ignorant or regardless of the impending tragedy; while the third stage is manifest in the thousands of earnest social workers,—and the supremely important conscientious members of our governing bodies come in this group,—who are endeavouring to secure the realisa-

tion in communal practice of every measure for uplifting mankind.

It is well for mankind that the Mother and the Child have become the foundation on which, more and more, we expect health progress to be built.

> A child more than all other gifts
> That earth can offer to declining man
> Brings hope with it and forward looking thoughts.
> (Wordsworth.)

The history of the Mother and Child summarises the history of the uplifting of mankind: and although there are not lacking sinister elements in the present position, it is a great gain that both in regard to the Mother and Child and to the saving of life and improvement of national health generally, we are beginning to realise that this is not merely a question of self-interest, personal or national; but that we are concerned also with duty, and honour, and chivalry.

CHAPTER VIII

Some Aspects of Poverty[1]

I use the word Poverty, for the purpose of this discussion, as meaning Destitution, in the sense of lack of means to provide some specific requirement, indispensable for the health of the family, or the individual.

Such poverty is evidently undesirable and mischievous, from the point of view of both rich and poor; and I think we shall agree that, given the adoption of the requisite measures, its continuance in most instances is unnecessary. Hence the real subject for discussion is, how poverty may be diminished and prevented.

I do not propose to touch on the important subjects of unemployment, of under-employment, or of the relation between the size of family and poverty, though the last named of these opens up an interesting subject of discussion. (On this see page 164.) I shall confine my remarks to the very obvious relation between poverty and sickness, and to the neglect to act on our present knowledge, which if acted on would in a short time lead to a great reduction of poverty in our midst.

[1] An address to the Political Economy Club, Johns Hopkins University, Jan. 19, 1920.

There is much truth in each of the statements that poverty is responsible for much disease, that disease is responsible for the greater part of the total poverty in our midst, and that poverty begets poverty.

Poverty and disease are allied by the closest bonds, and nothing can be simpler or more certain than the statement that the removal of poverty would effect an enormous reduction of disease. The removal of poverty must, therefore, be in itself an object always fascinating to those whose study is the public health. The diseases which would be reduced by this means, include not merely those which physicians treat, but many moral diseases which persist because they are only to be avoided by the poor through the exercise of discipline and self-restraint far beyond what is practised by the average person in classes not subject to poverty. The happiness of a community being in itself a desirable object, a national asset, it is also not irrelevant to consider that the removal of poverty involves enlarged opportunities for enjoyment which, rightly directed, would be only of less value than the removal of disease. It is not surprising, therefore, that the first impulse of a student of the public well-being, in which the public health is the most important factor, is to attack disease by demanding the reduction of poverty, with its more or less inevitable accompaniments of overfatigue, privation, overcrowding, and dirt. And it must be freely admitted that when the

most active public health administration, including adequate medical aid for the sick, has attained its utmost efficiency, and has in every respect done all that it can to reduce disease, there will still remain a cruel residuum which can be attacked in no other way than by the removal of poverty, or by the removal from poverty of the elements of personal privation which affect the public health.

The importance attached to poverty as a cause of illness and mortality is illustrated in reports on local investigations, displaying an inverse relationship in different communities between family income and the rate of infant mortality, the reader being left to infer, that increase of the lower incomes is the one method for obviating excessive loss of infantile life. In suggesting this crude generalization it is evident that poverty is being regarded as an element, instead of as a highly complex phenomenon, which needs to be further analysed into its constituent parts. The crude generalised statement as to the relation between excessive mortality and poverty, furthermore, fails to bring out three essential points, viz., that infant mortality may be very low in communities in which poverty is the rule; that it may be high in the absence of poverty; and that where infant mortality is high, it can be greatly reduced without change of economic conditions.

There should be an adequate family income for every family; and the social conscience cannot be sat-

isfied until this is realised. But, in seeking for practical reform we must appreciate that a large share of the disease and of the inefficiency of the individual and family associated with poverty can be remedied otherwise than by an increase of the family income. This is shown by national and international experience. The death-toll on infant life is very much lower in Norway and in Ireland—both relatively poor countries—than in England. Poverty in these instances evidently has less weight than the favorable factors of rural life and natural feeding. A like discrepancy in experience of infant mortality is seen between the experience of towns, and of wards in the same town, with approximate equality as regards poverty. Similarly in England the infants of miners with relatively high wages suffer a higher mortality (160 per 1,000 births in 1911) than the infants of textile operatives (148) with relatively low wages; while the latter suffer more than the infants of agricultural labourers (97). These instances at once suggest that some conditions in town life play an important part in causing excessive infant mortality; that in towns insanitary conditions and habits of life are even more injurious than the absence from home of the industrially employed mother; and that the causation of infant mortality is complex, and its prevention necessitates a multifarious attack on social and industrial evils, the character of this attack necessarily varying in different localities,

in accordance with the incidence of these evils. That the influence of urban life in causing excessive mortality can be counteracted is shown by the varying mortality in different urban communities, and in different parts of the same town.

We may in a given instance be totally unable to increase the family income; but the family's present expenditure may be more satisfactorily distributed; and some, at least, of the constituent elements of poverty producing excessive child mortality can be obviated. We know, indeed, that this can be done. The fact that in the United States no part of the family income can be spent on alcoholic drinks, implies the removal from multitudes of families of the demoralising influences associated with alcoholism, which are unfavourable to the health of adults and children alike.

Similarly, increased attention to domestic and municipal sanitation and to the provision of a pure and adequate milk supply, the health teaching given by public health nurses, and the prompt medical and hygienic guidance at Child Welfare Centres are having an important influence in the same direction. Work on these medical and sanitary lines, for both adults and children, comes legitimately within the sphere of the work of Public Health Authorities, provided out of rates and taxes.

It may be urged that such provision, after all, means supplementation of the family income at the public ex-

pense. It is more properly to be regarded as a measure of insurance against contingencies by which every member of the community is benefited; for we are each and all concerned in the efficiency of every other member of the community. We are members one of another. The objection stated above has no greater validity than an argument similarly advanced against the provision of police protection or of sanitary measures out of public funds.

Elementary, and to some extent secondary and university, education are regarded as not only the legitimate subjects of communal provision, but also as incapable of being provided satisfactorily by each individual family; and this view applies with even greater force to the provision of hospitals and expert medical assistance, of nursing assistance, and of such additional occasional domestic service as is required to maintain the functional integrity of the family.

I have given the above as a special instance of the contention that poverty is a complex, including a number of elements, and that it is our duty to ascertain in each area by careful local inquiry what are these constituent elements, and if practicable their relative weight; and then to apply the most urgently needed remedies, not contenting ourselves with the relatively useless generalisation that the evils we see are ascribable to poverty.

I lay special stress on the provision of skilled med-

ical advice and treatment, and of nursing assistance at the public expense, which at present are sorely deficient for the vast majority of the population, and perhaps for none more so than for the less well-to-do people who receive salaries and not weekly wages. This assistance possesses the special advantage previously pointed out, that it does not tend to create a demand for further assistance, when such assistance is not required.

The greatest bulk of poverty is due directly to sickness. A vast mass of sickness still occurs, which is not owing to lack of family or communal means, but is due to ignorance or neglect on the part of the individual, of the responsible owners of houses, of the employers of work-people, and still more of the members of local authorities or state legislatures. Typhoid fever still commonly prevails as the result of neglected sanitation; hookworm disease still causes incapacity of hundreds of thousands for the same reason; malaria, still one of the greatest scourges of humanity, might be reduced to a fraction of its present amount if each community and each person would carry out available simple preventive measures; tuberculosis is still spread throughout every civilized community chiefly because indiscriminate expectoration is unregulated, and satisfactory and acceptable hospital treatment is not provided for all those who need it. And so we continue to allow avoidable poverty to be perpetuated, and to impose not only on the sick poor them-

selves, but also on the efficient and solvent part of the community a heavy burden, the removal of which would, to an almost incredible extent, increase the general happiness of mankind.

The relief of poverty is at the best an inefficient and expensive remedy. It is seldom adequate, and it has few preventive elements. The prevention of poverty by prevention of the illness causing it, and by early and satisfactory treatment of such illness as fails to be prevented is the only efficient, as well as in the long run the only economical plan of campaign. Money insurance against sickness has its place as a means of alleviating the results of poverty. But it is not an aid to its prevention; under any existing system of insurance the money payment is insufficient and definitely limited in duration. Although such relief is useful, it is totally unsatisfactory when not linked up with a complete system of hygienic measures, and when not associated with adequate medical treatment and nursing. For the linking of treatment provided largely out of public funds with insurance there is no justification, and it is contrary to the public interest; and it is unfortunate that monetary insurance has been provided in England for a section of the population under these unsatisfactory conditions, thus diverting expenditure from the public health services in which it was urgently needed, and in which its use would at once have been fruitful in increased health and happiness.

CHAPTER IX

The Causation of Tuberculosis and the Measures for its Control in England[1]

My task is to attempt to give a bird's-eye view of "The Methods of Controlling Tuberculosis in England," and to revaluate, as far as is practicable, in the light of many years' study of the disease, the relative value of the measures which historically have been followed by the greatly reduced mortality from tuberculosis. The subject teems with difficulties, and as you are aware there is no unanimity of opinion when tuberculosis is thus considered. This is the more surprising in view of our present accurate knowledge of the pathology of disease caused by bovine and human tubercle bacilli, and in view of the fairly general unanimity of opinion as to the methods of control which are needed to secure still more rapid reduction of the devastations of tuberculosis. This general opinion may, I think, be summarised in the statement which I have made elsewhere, that the removal or diminution of infection from each single case of tuberculosis reduces correspondingly the prospect of further cases,

[1] The substance of two lectures at the Summer School on Tuberculosis, Trudeau Sanatorium, Saranac, N. Y., July, 1919.

but that tuberculosis will not be completely controlled until every tuberculous patient receives such care throughout the whole course of his life, as will ensure his welfare and will obviate the likelihood of his infecting others.

It is noteworthy that the English death-rate from pulmonary tuberculosis—which is responsible for 71 per cent. of the total mortality from tuberculosis, and which is practically always due to infection from a human source,—declined in males between 1871–75 and 1876–80 by 7.2 per cent.; in the next quinquennium by 9.8 per cent.; between 1881–85 and 1886–90 by 8.3 per cent.; in the next quinquennium by 9.5 per cent.; between 1896–1900 and 1901–05 by 7 per cent.; and between 1901–06 and 1906–10 by 9.7 per cent. Evidently a large share of the reduction of the death-rate from phthisis occurred before it was generally regarded as an infectious disease, and before sanatoria were in existence for its treatment. It should be added that since the possibilities of infection have been realised and the need for treatment of the disease has been appreciated, there has in no part of the world, so far as I am aware, been an adequate application of known methods of prevention and treatment.

We must look elsewhere, therefore, than to intentional measures directed against tuberculosis for an explanation of its decline during the period before Koch discovered the tubercle bacilli and before the

significance of this discovery was appreciated; and attempt to appreciate the relative value of the factors of decline operating before and since our outlook on the disease was fundamentally changed.

Certain facts stand out beyond controversy, and on these administrative control must necessarily be based.

Basic Facts as to Tuberculosis

1. Tuberculosis is a chronic infectious disease with a low degree of infectivity. Circumstances favouring infection have a high degree of importance; but tuberculosis does not develop in the absence of the tubercle bacillus. No infection, no disease.

2. Tuberculosis may remain latent in the system for many years, and there is strong reason for thinking that the infection of a large proportion of early adult tuberculosis was acquired in childhood.

3. The two types of tubercle bacilli, bovine and human, are stable both in character and in degree of virulence, and are not interchangeable so far as can be shown by protracted experimentation. The human type of bacillus is the chief source of infection of mankind, though bovine infection is not negligible.

Out of 98 children between the age of 2 and 10 years who had died in various hospitals from all causes unselected, 18 or 18.4 per cent. were found to have been infected by tubercle bacilli of the bovine type, and 81

or 81.6 per cent. by tubercle bacilli of the human type. (Report on Investigations made in the Laboratory of the Local Government Board, Annual Report of the Medical Officer of the Local Government Board, 1913–14, p. lix.)

4. Animal experimentation shows that in animals of the same species the extent of tuberculosis produced depends to a large and probably to a dominant extent on the number of tubercle bacilli introduced into the system. Although doubtless there are variations in susceptibility in families, and in each individual at different periods, there is little doubt that in the main the same rule holds good for mankind.

5. Experience shows that dusty occupations, indoor occupations, alcoholism, over-fatigue, an attack of acute illness, especially of influenza, measles, or enteric fever, increase the danger of minimal doses of tubercle bacilli, and serve to bring latent foci of disease into activity.

Explanations of the Decreasing Death-rate from Tuberculosis

In the light of the above facts, how is the steady and continuous decline in the death-rate from tuberculosis during the last fifty years to be explained?

(*a*) No support is given by animal experiment to the assumption that the types of human bacillus infecting mankind have declined in virulence; and changes

in the severity of consumption historically or currently in different races of mankind are equally explicable on the ground of differences in social misery, in sanitary conditions and associated heavier dosage of infection and neglect of treatment.

(*b*) The facts do not appear to me to be reconcilable with the assumption that natural selection has increased human resistance to infection by tuberculosis; though, were this so, it would not justify refraining from every possible effort to control infection and to treat every tuberculous patient by the best known methods. Tuberculosis is an ancient disease, there being evidence of it in Egyptian mummies 1000 years B.C.; and any selective agency has, therefore, had ages for its operation. If the steady decline—approximating 2 per cent. per annum in the death-rate from pulmonary tuberculosis in England during the last thirty or forty years—has resulted from the acquirement of racial immunity, it is remarkable that a somewhat similar decline has occurred almost simultaneously during the last forty years in Great Britain, Germany, and America; while in France, Norway, and Ireland there has been little if any decline, or it has occurred only in very recent years.

To assume that susceptibility to the tubercle bacillus in the course of its natural history has diminished in England, and that Ireland has not shared in this privilege would be to add one more to Irish grievances!

This assumption does not fit in with international facts; which point rather to the conclusion that, during the period in question, unsatisfactory sanitary and social circumstances, including opportunities for massive and protracted infection, have continued to a greater extent and for a longer time in Ireland and France than in Great Britain, America and Germany.

(*c*) If the assumption of increasing racial immunity does not consist well with all the facts, more perhaps can be said in favour of the unproved hypothesis that a high proportion of the population are from time to time temporarily immunized by small doses of tubercle bacilli; and their resistance to larger doses of infection thereby increased. Experimentally calves inoculated with small doses of tubercle bacilli remain during the next year or two unaffected by much larger doses of tubercle bacilli, unlike calves not submitted to this treatment. Tubercle bacilli are somewhat widely distributed, though they occur chiefly in the immediate environment of careless consumptive patients; and it is conceivable that minimal doses of bacilli may arouse the resistance of the cells and fluids of the body and prepare them to resist successfully larger doses of infection. This is consistent with the fact that while one in about ten deaths from all causes is caused by tuberculosis, a majority of the total population are shown by pathological evidence to have been at one time or another infected by tuberculosis, and yet have

either never been ill, or have recovered, usually without the existence of tuberculosis being detected or even suspected. Obviously this is satisfactory evidence that mankind is relatively resistant to the infection of tuberculosis.

The fact just mentioned naturally leads to the question: what determines the result when tubercle bacilli invade the human subject? Assuming fairly uniform virulence of tubercle bacilli, the result for an infected person depends on two factors: the dosage of infection, and the resistance of the cells and fluids of the invaded person; and evidently increase in the dosage of infection and lowering of personal resistance may have identical effect in determining serious disease. Of the importance of the already mentioned factors which lower personal resistance to disease,—often also at the same time increasing infection,—there can be no doubt.

It is impossible in most instances to set out separately circumstances increasing infection from circumstances lowering resistance. During the last three or four decades there has been improvement in respect of the factors lowering resistance to attack, but there has been simultaneously a great decline in opportunities for infection on a massive scale, as a result of habits of greater cleanliness, especially in regard to spitting, of diminished overcrowding of population, and of increased treatment and the incidental segregation of advanced cases of disease in hospital beds.

Hospital Treatment of Consumptives

I have seen no reason for revoking the conclusion expressed in 1908 in a lecture to the Washington International Congress on Tuberculosis that historically the hospital treatment and coincident segregation of patients suffering from pulmonary tuberculosis has been an important and probably a dominant factor in producing the national decline in the death-rate from tuberculosis in the countries in which a decline has been experienced. This explanation fits in with our knowledge of the disease, and with the analogous history of leprosy; and it is supported by the fact that by complete segregation of infected from non-infected cattle tuberculosis can be eliminated at will from a herd of cattle. It is remarkable, as I have elsewhere set out in much detail, that improved general health, increased well-being, and sanitary education have operated in Great Britain, Germany, Belgium, Denmark, and Massachusetts side by side with great decrease in the death-rate from pulmonary tuberculosis; while up to very recent years the same influences in France, Norway, and Ireland have produced little or no decrease in the national death-rate from tuberculosis. And similarly no constant relation can be shown between the degree of sanitary and social well-being in different countries and cities, and the amount of mortality imposed by tuberculosis. How is it that in some countries a high degree of domestic overcrowding is associated with a

low and declining phthisis death-rate and conversely that a persistently high phthisis death-rate may occur with a less but still diminishing degree of overcrowding? The explanation is contained, I maintain, in the following statement:

A given amount of domestic overcrowding with a large amount of institutional segregation of consumptives is associated with less tuberculosis than when overcrowding is less but accompanied by only a small amount of institutional segregation of consumptives. The data as to institutional segregation are difficult to obtain; but there is sufficient evidence to show that in countries which have experienced a large reduction in the death-rate from tuberculosis a large proportion of hospital treatment for many years has been provided for consumptives, while in countries which have not experienced this decline such provision has been absent or imperfect. In London about 56 per cent., in county boroughs 35 per cent., in other urban districts 21 per cent., and even in rural districts of England near 16 per cent. of all deaths from pulmonary tuberculosis occur in hospitals (poor-law institutions, general and special hospitals, and asylums). Prior to the patient's death he has had on an average at least three months, and probably in the aggregate more nearly five or six months, residential treatment, and this at the stages of disease in which there is the greatest discharge of infective material, in which owing to

feebleness the patient is least able to control its hygienic disposal, and in which—had the patient been treated at home—the relatives would be especially liable to receive massive infection, and would be enfeebled by overwork and anxiety, or by the malnutrition associated with poverty.

Some writers have failed to visualize the fact that the segregation of a minority of the total cases of pulmonary tuberculosis for a portion of their illness can have had a marked influence on the prevalence of this disease. They appear to be judging tuberculosis by the same measure as they would apply to smallpox, which in an unprotected community spreads rapidly if a few cases are overlooked. The case of tuberculosis, like that of leprosy, is governed by the considerations that both these diseases as a rule require intimate and protracted contact for their spread, and that in both diseases there may be prolonged latency before active disease develops. A hypothetical illustration may serve to elucidate the order of magnitude of the influence exercised by institutional segregation. Let us assume —as is probably the case in England—that one-fifth of the cases of pulmonary tuberculosis are treated during one-third of a year institutionally under conditions in which they will not be liable to spread infection. Let us assume further that each of these cases has an infectious lifetime of three years. Thus one-fifth of the cases are deprived of their power to spread infection

during one-ninth of their period of "open" disease. It being assumed that personal infection causes pulmonary tuberculosis and that segregation is efficient, segregation to the extent indicated above should secure a reduction in the death-rate from pulmonary tuberculosis of $\frac{100}{5 \times 9}$ or approximately 2 per cent.

In actual fact the decline in the English death-rate from pulmonary tuberculosis since 1871 has been at a rate slightly under 2 per cent. per annum.

Koch's Endorsement of Segregation View

An extract from an article written by Robert Koch shortly before his death may be permitted (Epidemiologie der Tuberkulose Zeitschr. für Hyg. und Infektious Krankheiten. 4. XVII, 1910).

I am entirely in agreement with Newsholme that the allocation of consumptives to institutions for the sick, as freely as possible and for as long as possible, is the most active means of avoiding infection and the consequent spread of phthisis.

In my experience, too, phthisis has shown the most marked decline in those places where comprehensive measures have been taken for bringing consumptives into hospitals, and the converse has been the case where the converse conditions prevail. It is indeed obvious that in no other way can the danger of infection, which a phthisical patient constitutes, be so effectively removed as by isolation in hospital. Strong support of this method is afforded by leprosy, where good results in attacking the disease have been obtained by following the same principle.

In addition to this factor there is a second, which also plays a very important part, viz., housing.

A hypothesis explanatory of a given phenomenon should be consistent with all the associated facts. We have seen that the hypothesis that segregation of consumptives is an important factor in the reduction of the death-rate from pulmonary tuberculosis agrees (1) with our knowledge of the tubercle bacillus, and (2) with veterinary and agricultural experience; also (3) that,—although exact data are unobtainable,—the degree of segregation when ascertainable is consistent with the degree of decline in the death-rate; (4) it is important to note also that this hypothesis is consistent with the otherwise anomalous facts that although the proportion of the population subjected to urban conditions of life has steadily increased, and the number of persons per inhabited room remains much greater in towns than in country districts, the death-rate from pulmonary tuberculosis in England has declined as much in them as in country districts; and that notwithstanding the greater overcrowding in towns, the urban is rapidly falling to the level of the rural death-rate from this disease. The town dweller's better and more frequent treatment in hospitals is an important factor in overcoming the handicap of urban conditions of life, including overcrowding and preponderance of indoor and dusty occupations.

It is desirable to supplement the above statement by some remarks on

Improved Housing as a Means of Reducing Tuberculosis

Not infrequently the thoughtless remark is made that given improved housing sanatoria and hospitals for consumptives would be unnecessary. The frequent occurrence of tuberculosis in well-to-do families shows the absurdity of this statement. It is true that tuberculosis is more prevalent among the poor living in small tenements that among the well-to-do; but there is no consistent proportion between the degree of overcrowding in different districts or towns and the death-rate from tuberculosis. Improved housing and institutional treatment for tuberculosis cannot properly be regarded as alternatives. They are necessary complements to each other, and there must be increased expenditure in both directions, if tuberculosis is to be more rapidly reduced in amount. There are in fact two housing problems—for the healthy, and for the sick. The most rapid method of improving housing for the healthy is to remove the sick, and especially the tuberculous sick to a hospital. This is being done year by year to an increasing extent. In England and Wales in 1870, 8.3 per cent., and in 1912 21.6 per cent. of all deaths from all causes occurred in public institutions. It is difficult to exaggerate the practical relief implied in these figures in respect of satisfactory housing, especially in its functional aspect. Apart altogether from the tuberculosis problem much

of the decline in the general death-rate must be attributed to the skilled treatment which a large proportion of the total population have received in our hospitals of various types.

I may, I think, claim to have answered in part the question asked at an earlier stage of this address, as to the causes of the steady decline in the death-rate from tuberculosis in recent decades. I do not claim that any one factor has brought about this result. I do not claim that it has been caused entirely by diminution of opportunities of infection; but I deprecate the view that improved nutrition and other conditions diminishing susceptibility have played a predominant part. The facts of international hygienic history rebut this view. Although segregation of patients in institutions has played a great part in bringing about the result, diminution of domestic infection as the result of more cleanly habits has doubtless had an important influence; as has also the reduction of industrial dust.

It is significant that general hygiene and improved care of the sick—quite apart from any intention to segregate—were associated with a large reduction in the death-rate from tuberculosis before the importance of reducing infection was fully appreciated; and that since the necessity for direct measures against tuberculosis was realised, since such measures have been begun, however imperfectly, in many countries, and

since anti-tuberculosis educational propaganda has been somewhat active, there has been no increase in the rapidity of decline of the death-toll of tuberculosis. Of course, it cannot be seriously—though it is foolishly—argued from this fact that such direct measures are futile. Every year there has been increasing migration of masses of people into towns, with a corresponding increase of undesirable domestic overcrowding and of indoor occupations. If, therefore, such anti-tuberculosis measures as have been adopted,—whether direct measures or general sanitary measures,—had been associated with an absence of decline or with actual increase in the death-rate from tuberculosis it might still be that these measures have achieved much. Many conflicting agencies are at work, and it might well be that the apparent lack of success of the measures taken is due to the increased operation of countervailing influences. The importance of direct action for the control of tuberculosis must be judged not solely by necessarily imperfect statistical measurement on the basis of a few years' observation, but *by ascertaining that the proposed measures are in accord with our knowledge of the natural history of the disease.* As we have seen, both comparative and human pathology assure us that tuberculosis is a communicable and therefore a preventible disease, and point the way to the means for securing this end.

Before describing the direct measures which have been adopted for the control of tuberculosis, it should be added that in no country have these been in operation sufficiently long, and in no country have they been so adequately applied, as to render it practicable to apply statistical measurement of their value; meanwhile these measures must be judged in the light of our knowledge of the pathology of tuberculosis.

Notification of Tuberculosis

If every tuberculous patient were intelligent, and willing and able to follow the advice given by his doctor, if he consulted his doctor for the first symptoms of illness, if his disease were recognized by the doctor at its earliest recognizable stage, and if the doctor in every instance gave the right advice and made the necessary examinations of all "contacts," no occasion would arise for the intervention or assistance of Public Health Authorities, except in providing bacteriological facilities and institutional accommodation. In actual fact these conditions are not secured for the majority of patients; and the private practitioner, however willing, is seldom in a position to remedy the domestic and industrial insanitary conditions which favour infection and lower resistance to infection.

Hence notification of cases of tuberculosis was advocated for many years by pioneer medical officers of health who secured voluntary notification by doc-

tors of a considerable proportion of the total cases in their districts, and in a few instances secured compulsory notification by local enactment, before any general regulations on the subject were made. It is noteworthy that in this early period a town like Brighton, which had voluntary notification with sanatorium provision for patients willing thus to be treated, secured the notification of a larger proportion of total cases than another town in which notification was compulsory, but no sanatorium accommodation had been provided. The point is mentioned as emphasizing the general principle that compulsory measures in public health, if they are to be successful, require to be associated with full provision for the action which should follow the compulsory enactment; which provision, as in this case, may be a direct inducement to compliance with the enactment. In view of the change of central policy involved and of the unpreparedness of most local authorities to give the assistance needed for notified cases, the general enforcement of notification of tuberculosis was brought about in stages; in 1909 poor-law cases of consumption were made notifiable throughout England and Wales, hospital cases in 1911, consumption in the general community in 1912, and all forms of tuberculosis in 1913.

It was not anticipated that complete notification of cases would be obtained for some years, but a review of English national experience of notification of tubercu-

losis up to the present time necessitates the confession that there has been failure to secure the coöperation of an unexpectedly large proportion of the medical profession in this public-health duty. Many cases have never been notified and in a large number of other cases notification has been belated; Dr. Barwise, County Medical Officer of Health of Derbyshire, obtained information as to 417 deaths certified during 1917 to be due to tuberculosis, and found that of this number 39 per cent. had never been notified, and that over 70 per cent. had either not been notified or died within twelve weeks of notification. This may be an exceptionally bad experience; but the duty of notification in many areas is only imperfectly performed, and no adequate steps are being taken to diminish this default.

As notification is the first step towards coördinated measures for the patient and in the interest of the public health, the causes of delay in notification and of failure to notify deserve further examination.

Causes of Failure in Notification

1. The patient himself commonly is responsible for much delay in the recognition of his disease. A large proportion of consumptive patients refrain from applying for treatment until disease is fully established, and until they are incapacitated for work. Not infrequently this means that the patient does not consult a

doctor until a few months or even weeks before his death. Until the conditions of general medical practice are altered, and every person has the right to state-paid medical consultations, belated recourse to medical advice will continue.

With this there is badly needed further education of the public as to seeking advice for protracted colds and coughs, or for other symptoms suggestive of tuberculosis; and a wider hygienic propaganda as to housing, overcrowding, dusty indoor occupations, expectoration, etc., is also called for.

2. Under present conditions of medical practice, early diagnosis of tuberculosis often fails to be secured, even when the patient places himself under medical care. It is to the private practitioner that most patients resort, and the early recognition and treatment of disease depends primarily (*a*) on his skill, (*b*) on his not being so overworked as to be unable to devote adequate time to the examination of each patient coming under his care, and (*c*) on his willingness to refer doubtful cases for consultation with the official tuberculosis officer of each area. These officials have only existed during the last few years; their work was partially in abeyance during the four and a half years of war; and apart from this, they have not always succeeded in persuading the private practitioner that their coöperation is to be welcomed and that they are not agents for depriving him of his pri-

vate patients. This assumed antagonism between private and public medical practice is one of the most serious difficulties in securing more rapid progress in anti-tuberculosis work.

3. For nearly every sanitary area gratuitous facilities are now provided for the examination of sputum for tubercle bacilli, and yet in many areas there is grave neglect to utilize this provision, and patients with chronic phthisis may be treated during long months or even years for "winter cough," "bronchitis," etc., without adequate physical examination of sputum. The diagnosis of pulmonary tuberculosis ought, it is true, to be made before tubercle bacilli are found in the sputum, and failure to recognize the disease prior to this implies that the disease has already become serious; but in fact a very large proportion of consumptive patients for many months have tubercle bacilli in their sputum, before the diagnosis of tuberculosis is made.

4. When, as in some areas, the medical officer of health or the tuberculosis officer takes little, if any, useful action after notifications have been received, the practitioner has an excuse for not notifying subsequent cases. He can argue with some cogency that notification has no value *per se;* its utility depends on the action which follows on notification. Unless useful action follows on notification, default in notification has little practical importance.

Public Health Action Following Notification

Under the English Tuberculosis Regulations the medical officer of health or an officer of the local authority acting under his instructions is required to make such inquiries and take such steps as may be necessary or desirable for investigating the source of infection, for preventing the spread of infection, and for removing conditions favourable to infection. The action required includes *inter alia*

1. Attention to the personal hygiene of the patient, including instruction in the necessary precautions as to coughing and expectoration.

2. Any assistance needed to ensure for the patient

(*a*) Skilled medical attendance and nursing as required while he is treated at home;

(*b*) Institutional treatment when required;

(*c*) Supplementation of the convalescent patient's funds, when needed, to obviate the necessity for him at once to embark in full-time work; to provide additional bedroom accommodation when needed; and to ensure that the patient and his family are not undernourished or overworked.

3. Remedial action for any insanitary conditions of the home, such as uncleanliness, dampness, overcrowding; or of the patient's workplace, especially for dusty occupations.

4. Examination of home contacts with the patient.

The last named item may conveniently be considered further at this point.

Examination of Contacts

This branch of tuberculosis work is most important. Often the first notified case is not the first clinical case of tuberculosis in a given family; and from the standpoint of prevention the detection of such cases of longer standing is important. Examination of contacts also frequently discovers patients in an earlier and more curable stage of disease than the notified patient.

It is important that all home contacts of each notified case of tuberculosis should be examined; and one of the most important functions of the tuberculosis officer is to arrange for this. The examination may be carried out by arrangement at the tuberculosis dispensary; but otherwise, at the home of the invaded family. When there is a medical practitioner in attendance his coöperation and presence should as a rule be invited.

Such systematic examination of the household not only is more efficient in discovering sources of continuing infection than the desultory examination of a few contacts,—which often still represents the extent of this important work,—but it has in addition a greater educational effect on the public; and general recourse to such systematic observations would rap-

idly improve the prospect of satisfactory control of tuberculosis.

Even when examination of contacts is practised after notification of a case of pulmonary tuberculosis, it is too often neglected after notification of non-pulmonary cases. This represents a great public-health loss; the majority of cases of non-pulmonary tuberculosis are caused by infection of human source, and this source often is an unrecognized case of pulmonary tuberculosis in the patient's family.

Scope of Tuberculosis Schemes

Prior to the general enforcement of notification of tuberculosis in England excellent local work had been done in a relatively small number of areas in direct efforts to control the spread of tuberculosis, in addition to the previous general measures, such as improved sanitation, better housing, more satisfactory nutrition, and especially the hospital treatment of a large proportion of advanced and acute cases of tuberculosis. The Report of the last Royal Commission on Tuberculosis appeared in 1911; and although precautions against human infection by tuberculous cows' milk are still very incomplete, the pasteurisation or boiling of milk is more generally practised than in the past.

Local Authorities prior to 1911 had power to build sanatoria or otherwise provide institutional accom-

modations for the treatment of tuberculous patients; relatively little had been done in most areas. In 1911 the Finance Act provided a sum of £1,116,000 for the erection of sanatoria in England and Wales, and this, with money provided by local rates, has led to rapid increase in accommodation for the residential institutional treatment of tuberculosis. In England in 1911 local authorities, other than poor-law authorities, had about 1300 beds for the institutional treatment of tuberculosis, while there were 4,200 beds in private sanatoria and voluntary institutions. In 1917 the total available beds numbered 12,441, of which about one-half had been provided by local authorities.

In 1911 the National Insurance Act was passed and came into operation in July, 1912. This provided a special "Sanatorium Benefit."

The Departmental Committee appointed to make recommendations as to detailed direct measures against tuberculosis, reported in April, 1912, that any scheme which is to form the basis of an attempt to deal with the problem of tuberculosis should be available for the whole community, and that its organization should be undertaken by the large local authorities (the councils of counties and county boroughs). These recommendations were at once adopted by the Government, which undertook to provide out of the national exchequer one-half of the net cost of approved local schemes for the general treatment of tuberculosis.

Local authorities were invited at once to prepare schemes for institutional treatment, residential and non-residential, domiciliary treatment remaining in the hands of private practitioners, of poor-law doctors, and of doctors engaged in the contract work under the National Insurance Act ("panel doctors"). The last named are in medical charge of the large mass of the wage-earners of the community, comprising roughly one-third of the total population, in so far as their treatment at home is within the power of a practitioner of average competence. The schemes proposed for each area comprised,

1. The appointment of a tuberculosis officer, usually a whole-time official, who was required to have had special experience in the diagnosis and treatment of tuberculosis, and who as a rule was an officer in the public-health department under the administrative supervision of the medical officer of health, but independent in his clinical work;

2. The establishment of tuberculosis dispensaries, at which patients were treated, consultations as to doubtful cases held, and contacts examined;

3. The provision of beds in residential institutions for curable and for acute and advanced cases;

4. The organization of arrangements for "following up" and "after-care."

During 1912 and 1913 advance was made in these directions. In 1911 there were 25–30 tuberculosis

dispensaries: in 1917 their number had increased to 371. In 1914 the onset of the Great War prevented further development of tuberculosis work and seriously crippled and reduced the efficiency of work already initiated; and this increased as the military demand for medical officers and institutions became greater. It may be stated generally that in only a relatively small number of areas have fairly complete arrangements for the institutional treatment of tuberculosis come into operation; and that even in these areas the arrangements have been at work for only a limited period. It is evident, therefore, as already pointed out, that no argument as to the utility of these arrangements can be based on the facts that the death-rate from tuberculosis has not declined with increased rapidity in recent years, and that women during the war, especially at the working years of life have experienced an increased death-rate from this disease.

Tuberculosis Dispensaries

The tuberculosis officer is the essential element in the dispensary; and in rural districts he may be said to carry the dispensary under his hat. The dispensary if properly organized should serve as the centre of official anti-tuberculosis measures. The medical officer of health receives the notifications of recognised cases whether they are attending the dispensary or not; and it simplifies administration if the home su-

pervision of all tuberculous patients notified to the medical officer of health, and not only of dispensary patients, is placed under the supervision of the tuberculosis officer. At the dispensary itself the tuberculosis officer examines patients, makes records of their condition, and of all facts bearing on their welfare, and recommends the special form of continued treatment adapted to their condition. This may be domiciliary, or given at the dispensary, or in a sanatorium, or in a hospital. A dispensary which does not supervise and treat a large proportion of the total notified cases, including especially patients before and after they have received treatment in a residential institution, is not fulfilling its possibilities of utility.

At the dispensary is organized also the examination by the tuberculosis officer of "contacts," and of school children suspected to be tuberculous; though it is often necessary to arrange for this officer to make similar examinations at patients' homes. At the dispensary consultations with private practitioners are conveniently held; though in this instance also the tuberculosis officer should arrange when this is desired for the consultations to be held at the patient's home.

The dispensary alone cannot ensure the welfare of the tuberculous patient. It is necessary that the tuberculosis officer should have consultations concerning difficult cases with the medical staff of general and special hospitals. To segregate the treatment of tu-

berculosis from that of other diseases means reduced efficiency of the tuberculosis officers and lowered quality of treatment.

Tuberculosis Dispensaries should become Parts of General Dispensaries

Public Health and School Authorities have already established many centres at which hygienic instructions and medical treatment are given for mothers and their young children when ailing, or with a view to the prevention of future illness; for tuberculosis; for venereal diseases; and for various ailments of school children.

In England in addition there is poor-law provision (sometimes at dispensaries) for patients dependent on official charity. Evidently the multiplicity of authorities, local and central, concerned in this medical work, is not conducive to efficiency; and it will, we hope, soon disappear. Similarly it will be in the interest of efficiency, as well as of economy, to provide for the treatment of the above-named groups of cases in a common Medical Institute for each defined area, at which also it will be advantageous to arrange for much of the treatment of insured persons. By this means it will become practicable to arrange for consultations between experts in different departments of medicine, to the advantage of all concerned.

It will be contrary to the communal interest if the

resources of voluntary hospitals in large towns are not also utilised in official medical work. Many of these hospitals have specialised departments (e.g., X-ray, eye, ear, throat, skin, and other special clinics), the use of which ought to be obtainable, even though for many years it may not be practicable to arrange for all hospitals to be financed in part at least out of rates and taxes.

The tuberculosis officer in order to be able to treat his dispensary patients with adequate knowledge, and in order to advise as to the form of treatment—in a residential institution or not,—most fitted to the patient's case, must know the sanitary and social circumstances of the patient's industrial and domiciliary life. He must, therefore, have reports on these circumstances respecting each patient. This raises the general question of the relation of the tuberculosis officer to the medical officer of health. The medical officer of health is officially responsible for controlling the tuberculous patient and his environment from a public health standpoint. As the tuberculosis officer also needs the information acquired in the inquiries which it is the duty of the medical officer of health to make personally or by an authorized agent, coördination of the work of the two officers is evidently required; and this need cause no difficulty when the tuberculosis officer is an officer in the Public Health Department of which the medical officer of health is the chief administrator.

The Home Visitation of Patients

This is important, (*a*) to inquire into the social circumstances of each patient; (*b*) to instruct him in detail as to the carrying out of instructions for treatment and in the hygiene of his life; (*c*) to make a sanitary survey of the dwelling house, and especially of the patient's bedroom, and to advise as to any needed reforms; and (*d*) in certain cases to give actual assistance in nursing the patient.

The report on these inquiries should be seen by both the medical officer of health and the tuberculosis officer, and on them in conjunction with the tuberculosis officer's knowledge of the medical condition of the patient, the subsequent course of supervision and treatment will depend.

Home visitation can be carried out by nurses attached to the dispensary or by inspectors of the public health department. The latter will usually be more competent in detecting and remedying sanitary defects in the home; the former in encouraging the patient to carry out the needed requirements in personal hygiene and nursing. Many visitors are equally competent in both directions; and as the number of women specially trained in tuberculosis work increases this will more generally be the rule.

The dispensary should be the active working centre from which home visitation is undertaken; and this is especially important in "following up" work. Fol-

lowing up is needed for persons who have been examined once, concerning whom there is doubt as to their freedom from disease and who fail to present themselves for later examination. It is needed also for patients who have been under treatment and neglect to continue it; and for patients who after having been treated have been discharged and fail to report themselves at intervals as directed. It is important to have efficient arrangements for ascertaining these leakages and for making the necessary inquiries. The method of securing this will vary according to local circumstances; but the following example given by Dr. Chapman of an official method may be placed on record:

> When a patient is instructed to attend again at the dispensary his name is noted in a diary under the date upon which he is asked to attend. In some instances a definite time is fixed for the appointment so as to save the patient's time. The names of all patients who attended the dispensary upon the day appointed are ticked off as they are seen, and at the end of the day the names of patients who have failed to attend remain on the list. Letters are then sent reminding these patients of their engagement and making another appointment. If they still fail to attend they are visited by the dispensary nurse or the health visitor. Failure to attend may be due to relapse, and, when this is likely, an early visit of inquiry by the nurse is advantageous.
>
> Examination of a register kept for faciliating work of this kind showed that the majority of the patients followed up attended subsequently, and that in the cases of the remainder non-attendance as a rule was satisfactorily explained.

In areas having, as yet, no adequate system of fol-

lowing up, an appreciable percentage of patients usually cease to attend during the course of treatment at a dispensary, and many are lost sight of after discharge from a sanatorium. The value of the work of a dispensary and of after-care work is materially impaired in the absence of a system of "following up." As schemes develop, more stress will doubtless be generally laid upon this branch of the dispensary function.

"Sanatorium Benefit."

Under the National Insurance Act the annual sum of 1s 3d (30 cents) was set apart for each insured person; as the result of subsequent bargaining with medical practitioners 6d of this was devoted to the domiciliary treatment of tuberculosis patients (payable on the number of panel patients on each doctor's list, not on the number of his tuberculous patients), the remainder being payable to local authorities who undertook the provision of institutions for the treatment of tuberculous insured patients.

Thus the "Sanatorium Benefit" comprises

A. Domiciliary treatment.
B. Institutional treatment.
  (*a*) Non-residential—Dispensaries.
  (*b*) Residential—Sanatoria,
    Hospitals,
    Convalescent Homes and
    "Farm Colonies."

Soon after the passing of the National Insurance Act in 1911 representations were made that tuberculosis affected non-insured as well as insured; that treatment of insured could have only partial success so long as non-insured members of the same household were neglected; and that this was work for public health authorities which they were already partially undertaking. It was evident that the inextricably interlaced measures for the prevention and the treatment of tuberculosis must accrue to the whole population; and the mistake of the National Insurance Act was remedied to the extent that Public Health Authorities were informed that the National Treasury was prepared to pay one-half of the approved expenditure incurred by these authorities in establishing schemes for the treatment of tuberculosis available for the entire population. Such schemes were proceeded with, as already indicated; but there remained the fact that insured persons who had paid their weekly quota and were therefore entitled to "Sanatorium Benefit" usually interpreted this as a right to three months' treatment in a Sanatorium. The choice of persons to receive treatment in a Sanatorium lay with Local Insurance Committees appointed under the National Insurance Act, who generally acted on the advice of the tuberculosis officer; but influences other than medical led to the unsatisfactory use of institutional treatment. A large number of patients were sent to and

retained in sanatoria for prolonged periods, who might have been adequately treated at home, or who should have been in hospitals. Satisfactory results for sanatorium treatment were not secured under these conditions; and there will probably be no material improvement until the Sanatorium Benefit is withdrawn as a special benefit under the National Insurance Act, and the treatment of tuberculosis becomes an obligatory duty of Public Health Authorities, with a minimum standard of provision to which all must attain.

Residential Institutions

The extent to which these have been provided in England since 1911 has already been stated. The number of beds available in 1917 was 12,441, in addition to some 9,000 beds in poor-law institutions, which in 1911 were occupied by consumptives. From the point of view of the provision required in residential institutions for the treatment of tuberculosis the following classification is useful. It is confined to pulmonary cases:

Group *A*—Cases in which permanent improvement or recovery can usually be anticipated.

Group *B*—Cases in which only temporary, though possibly prolonged, improvement may be anticipated.

This group will include

1. Patients who may be expected to recover considerable ability to work, as a result of protracted treatment.
2. Patients admitted for a short term for educational treatment.
3. Patients with advanced disease, many of whom improve greatly under institutional treatment.

Group *C*—Advanced cases requiring continuous medical care and nursing.

Group *D*—Cases requiring Special Observation.

1. Patients admitted for the purpose of diagnosis.
2. Patients needing to be watched, before the best form of continued treatment can be determined.

Emergency cases, e.g., patients with haemoptysis, and patients requiring surgical treatment may come within any of the above groups.

Of the 12,441 beds probably 5,000 are in the hands of voluntary organizations, and are intended for patients in group *A*, though for the reasons set out on pages 208 and 223 they contain a large proportion of patients in the other groups. It appears not unlikely, however, that the total accommodation, official and voluntary, for patients in group A has reached one bed per 5,000 population, the accommodation recommended by the Departmental Committee on Tuberculosis as immediately advisable. This accommodation is unevenly distributed and much of it is being utilised for

patients coming within groups *B*, *C*, and *D*. All the evidence available shows a great need for additional beds for patients coming within the last-named groups. The Departmental Committee recommended that the total needs of the community might be assumed to amount to one bed to 2,500 population for all stages of pulmonary tuberculosis, in addition to poor-law accommodation. This means a provision of some 14,000 beds in addition to the 9,000 poor-law beds, or a total provision of about one bed to 1,500 population.

If we include cases of non-pulmonary tuberculosis it may be safely assumed that each community should aim at having available for the treatment of tuberculosis at least one bed per 1,000 inhabitants. Fewer beds may suffice for sparsely populated communities, and more will be needed in some towns.

In England various existing institutions have been utilised in the treatment of tuberculosis.

1. Emphasis has already been laid on the large number of beds in *workhouse infirmaries under the Poor-Law Authorities*. Of the historical, as well as of the present value of this accommodation for advanced cases of tuberculosis in the poorest section of the population—which is most seriously exposed domestically to massive infection,—there can be no doubt.

But there has been prejudice against the use of this accommodation for insured persons, and such use is legally precluded; and since the passing of the Na-

tional Insurance Act additional provision has been made by Public Health Authorities, and ere long the whole of the present poor-law accommodation should come under public health authorities.

2. Detached pavilions of *hospitals for infectious diseases* have also been employed for the treatment of tuberculosis, and experience has demonstrated that in well-conducted institutions consumptives are not exposed to risk of acquiring acute infectious diseases.

The use of these institutions favours economy of administration. It possesses the advantage that patients are, as a rule, more accessible to their relatives than in a sanatorium; and this renders patients suffering from progressive disease more willing to remain in the institution than they would otherwise be. Patients can advantageously be placed in such an institution for observation, before deciding whether prolonged treatment in a distant curative sanatorium is indicated.

Occasionally empty *smallpox hospitals* have also been employed for the institutional treatment of tuberculosis; but if this plan were to be generally adopted, tuberculosis work would be seriously crippled if smallpox became epidemic. The treatment of consumptives in a smallpox hospital should only be permitted for patients who could be at once transferred and who can be at once vaccinated.

General hospitals are well fitted to deal with the following classes of cases of tuberculosis:

(*a*) Patients admitted for observation, with a view to diagnosis;
(*b*) Patients admitted to ascertain the form of treatment best adapted for the patient's needs;
(*c*) Emergency cases, e.g., haemoptysis;
(*d*) Patients requiring surgical aid for intercurrent diseases;
(*e*) Patients with advanced disease admitted for special purposes;
(*f*) Patients with non-pulmonary tuberculosis, requiring special surgical treatment.

In approving arrangements for the treatment of pulmonary tuberculosis in a general hospital, it should be made a condition that they shall not be received into general wards of the hospital in which there are persons suffering from other diseases, unless for a sudden emergency, or for a short period for operative treatment, or unless there is no expectoration, or if this, on repeated examinations has been found to be free from tubercle bacilli.

Sanatoria and Combined Institutions

To ensure efficiency in a santorium a resident physician is, as a rule, necessary; and this is desirable also for a tuberculosis hospital. Smaller authorities may be unable to combine together or to provide alone an institution with about 100 beds, which is generally regarded as the unit best adapted to secure a well-placed

and efficiently organized institution, with due regard to economy of administration. To provide such a unit, and even apart from this, the desirability of treating patients in all stages of disease in the same institution should be considered. Experience in England has shown that this combination presents no medical administrative difficulties, provided that the type of sleeping accommodation for patients consists chiefly of rooms for one or two patients or of small wards. With such an arrangement, if a section of the institution consisting of one or two bedded rooms or small wards is devoted to patients needing special nursing, irrespective of the stage of disease, efficiency is secured, the special needs of each class of patients can be met, and—this is especially important—the patient with advanced disease cannot infer the hopeless character of his illness from his place in the institution. Such a combined institution affords the medical and administrative advantage that the tuberculosis officer can, as a rule, watch his patients throughout the whole course of their treatment, both in the residential institution and at the dispensary.

In choosing a sanatorium an area of at least twenty acres should be available; and at least one-fifth of an acre should be allowed per patient. For a hospital a smaller area is permissible. There should be a floor-space of at least 64 square feet for each patient; and the centres of the heads of adjacent beds should not

be distant less than 8 feet measured against the wall. Experience appears to show that in a large sanatorium one nurse will generally be adequate for every twelve patients. In a hospital for advanced patients, or in a combined institution a larger staff may be required.

Observation Beds

There is but little systematised experience as yet of the employment of observation beds; a difficulty arising from the fact that the tuberculosis officer under most local tuberculosis schemes has not been sufficiently in touch with the medical officers of the residential institutions to which he sends patients. There are practical difficulties in the provision of observation beds on the dispensary premises, including the difficulty of due regard to economy of administration in the nursing and treatment of three or four in-patients at a dispensary. Whatever arrangements are made for such beds, it is desirable that the tuberculosis officer should have access to the patients treated in them.

General Observations on Treatment in Sanatoria

In 1911 the extent and limitations of the utility of sanatorium treatment of tuberculosis were already fairly well recognized by physicians; and it is unfortunate that in connection with the passage of the National Insurance Act this treatment acquired a some-

what political aspect, and became the subject of much popular misapprehension and exaggeration. Disappointment necessarily followed on the sending of patients to sanatoria for treatment with a view to cure at a stage of disease when anything beyond ephemeral improvement was impossible. The patients who, under present conditions, are admitted to sanatoria come roughly into two groups:

First. Patients with limited disease and little or no systemic disturbance. Comparatively few patients who now enter sanatoria come within this group.

Second. Patients with more extensive or acute disease. In a large proportion of cases within the first group the immediate result of sanatorium treatment extending over three to six months is the complete restoration of general health and working capacity with arrest of disease. In a large further proportion of cases in the same group there is recovery of working capacity and apparent restoration of general health without complete arrest of disease.

For patients coming within the second group a similar period of treatment in a sanatorium results:

(*a*) In restoration of general health and working capacity with arrest of disease in only a small proportion of cases;

(*b*) In recovery of working capacity and apparent restoration of general health without arrest of disease in a fair proportion of cases; and

(*c*) In the remainder, disease progresses steadily with or without temporary improvement in general health.

The subsequent history of sanatorium patients varies greatly. Some of them maintain their health indefinitely on return to their ordinary life. Others who have been discharged with arrested disease ultimately relapse, even if they live under excellent environmental conditions; and such relapses are excessive among those who return to unsatisfactory conditions of life and work.

Among patients discharged from a sanatorium without arrest of the disease a small proportion ultimately recover completely, but the majority relapse at a date which is earlier or later in accordance more or less with the conditions under which they live and work and the severity of their disease.

The experience of the last few years has been that only a small proportion of the patients admitted to sanatoria are cases in which arrest of the disease can be anticipated; and this will continue until the disease is more generally detected at an earlier stage than at present, and the sanatorium treatment is prescribed and continued solely in accord with the medical needs of the patient.

The conditions of local administration of the Sanatorium Benefit under the National Insurance Act have led to a very high proportion of consumptives being

treated in sanatoria with a view to cure, who might advantageously have received educational treatment for a few weeks and then have been treated at home or at a tuberculosis dispensary. Furthermore, a large number of patients with advanced disease have been sent to sanatoria for whom treatment in a hospital was more appropriate.

Educational Work of Sanatoria

Apart from the question of cure, which with belated treatment can only be expected in a minority of cases, the sanatorium serves an important purpose, not only in restoring patients to a considerable degree of health and working capacity for a longer or shorter time, but also in educating the patients how to live and conduct themselves. A stay in a sanatorium for a short period —a month or six weeks—under doctors and nurses who realise the value of this work—would there were more of these!—secures the training of the patient on lines beneficial to his future health and enables him to obviate all danger for others.

In such a short stay in a sanatorium what may be called tuberculosis discipline can be and is acquired when the sanatorium is satisfactorily administered; and the patient thus disciplined is in a much more favorable position for securing his own welfare and that of others than the undisciplined patient, just as the soldier who has had routine drill under a compe-

tent instructor is more efficient than the untrained recruit.

The preceding remarks as to the treatment of tuberculosis in sanatoria illustrate certain well-known features in the natural history of this disease. In the majority of instances of disease recognised under present conditions we are dealing with a slowly progressing disease. This sometimes become spontaneously arrested; occasionally it may be arrested or its course delayed under medical treatment at home associated with manageable changes in domestic and industrial life. In still further instances it may be arrested by treatment in a sanatorium; while for other cases sanatorium treatment, however prolonged, is followed by only temporary improvement, and the chief benefit thus received is that of training as to mode of life, which might have been secured by a much less protracted stay in the institution, followed by measures supplementing sanatorium treatment. We have further to recognise the fact that, under present conditions of social life and medical practice, many tuberculous patients will slowly, by intermittent stages, but none the less surely, die from tuberculosis in the course of one, three or five years. Regard must be paid to this fact if our total measures for the control of tuberculosis are to be successful.

Hospital Treatment

This fact emphasizes the importance of adequate hospital treatment for all patients acutely ill or bedridden, who cannot be hygienically treated at home; and the importance becomes evident of exercising *complete supervision over and provision for the whole of the sick life of the consumptive, whether he is trending towards complete recovery or to death.*

Such complete supervision and provision necessitates further development in three directions in which beginnings have already been made:

Industrial Colonies

These are the provision of "Farm or Industrial Colonies," the adaptation of domestic dwellings to meet the special needs of consumptives, and the more complete organization of "Care" and "After-care" arrangements.

In a large proportion of cases, the patient on leaving the sanatorium is unable at once to embark on full work without risk of early relapse, or to refrain from this without endangering his nutrition and that of his family. His work, furthermore, may be unsuitable for a consumptive.

This has led to many tentative efforts to train the consumptive in a suitable occupation while under sanatorium treatment, or in an industrial colony which should preferably be attached to or in close commu-

nication with a sanatorium, in order that the patient may continue under skilled medical supervision. The graduated labour which forms part of the routine method of treatment in many sanatoria can be made a preparatory stage in this industrial training. The training may be made to merge into the pursuit of an actual livelihood; and then the sanatorium becomes an industrial colony. Market gardening, pig-keeping, forestry, and other occupations may be thus pursued for protracted periods, if the patients are suitably selected. The ex-patients continue to live under protected conditions, earning part at least of their livelihood. Attempts in this direction are not likely to have wide success unless the patient is re-instated in his family; and the most promising efforts are those which install the ex-consumptive with his family in a cottage near a sanatorium, where he can remain under partial medical supervision, while engaged in his daily work. It remains to be seen to what extent such arrangements are practicable on a considerable scale, and the experiments now being made will be watched with interest.

Special Dwellings and Help in Support

An alternative to the "colony" proposal, which will probably be found practicable in a much larger number of cases is to arrange for the ex-patient to be housed at his home under special conditions and for his work

to be graduated according to his physical condition, assistance being given by way of payment of rent, or otherwise to ensure that the patient and his family live under satisfactory conditions. Proposals have been made by Dr. Chapman in a report to the English Local Government Board that in connection with new housing schemes a certain proportion of the houses erected should have rooms providing free perflation of air reserved for consumptive patients. If with this is combined the assistance indicated above, the risk of the ex-patient relapsing will be materially reduced, and the risk of other members of the family becoming consumptive may be obviated.

Whatever methods are employed, the principle already enunciated must be maintained that the patient in his own interest and in that of his family must be the subject of uninterrupted care and supervision.

In securing this end *Care Committees* play a valuable part. Owing to the war their development has been retarded; but a local scheme for such supervision and assistance as the members or agents of a Care Committee can give forms an essential part of a complete tuberculosis scheme.

These Committees are formed of non-official persons, inasmuch as a large share of their work is at present beyond the scope of official possibilities, outside the poor-law organization; they can help,

(*a*) in obtaining appropriate work for the ex-patients;

(*b*) in supplementing his wages;

(*c*) in providing separate sleeping accommodation for the patient, additional food or clothing, or in loaning out an additional bed or bedding;

(*d*) in aiding the family during the absence of the patient in a sanatorium, and thus reducing the temptation to terminate institutional treatment prematurely, and

(*e*) in encouraging each patient to take the necessary precautions and to adopt the special treatment recommended for him.

Some of these activities overlap into the activities of the tuberculosis officer and of the visiting nurse of the local authority; but there need be no practical difficulty in adjusting this. It is important that Care Committees should act in coöperation with local authorities, insurance committees, and charitable agencies, and should have representatives of these bodies on them. The medical officer of health and tuberculosis should also be ex-officio members of their committee.

Summary.—The preceding review of the problem of tuberculosis may be summarised in a few final statements.

1. Our knowledge of tuberculosis, if fully applied by combined attack on the disease by all known methods, is adequate to secure a great reduction in its prevalence, if not its absolute abolition.

This is true, although certain problems respecting tuberculosis still need elucidation, e.g., as to improved methods of treating the diseases, and of increasing individual immunity during exposure to protracted infection.

2. Domestic protection is at once practicable against infected cows' milk; and control of this source of infection at its source is also practicable.

3. Of the circumstances favouring the development of pulmonary tuberculosis industrial dust and domestic overcrowding are the most potent. More detailed and systematic supervision of factories and workshops is needed, followed by general adoption of remedies, which would increase industrial efficiency as well as reduce tuberculosis.

4. Tuberculosis is especially a "bedroom infection." But improvement in housing is a dual problem, and it is a blunder to assume that improved housing, so long as the healthy and tuberculous sick continue to be housed together, will produce a rapid decline in the prevalence of tuberculosis. Hospital provision for the sick is as necessary as improved general housing.

CHAPTER X

Child Welfare Work in England[1]

The subject of child welfare, in its chief developments, cannot be separated from that of Public Health, of which it forms a constituent part, though I do not ignore the fact that child welfare is largely dependent also on the extent to which child labor is exploited, and to which expectant and nursing mothers,—as also other mothers whose extra-domestic employment or whose employment for gain is within the home itself,—involves neglect of young children.

Improvement in child welfare has occurred as the sanitary and social progress of the country has advanced. Whereas in the decade 1871–80, when money began to be spent more freely on elementary sanitary reform, the expectation of life or mean after-lifetime at birth of males was 41.4 years and of females was 44.6 years; in the years 1910–12 these had increased to 51.5 and 55.4 years respectively. The greater part of the saving of life which this addition of ten years to the average duration of life was the result of reduced mortality in children under five years of age.

[1] Extracted from addresses given at Conferences held by the Children's Bureau of the Department of Labor, Washington.

The first direct steps towards the reduction of infant mortality were directed against epidemic or summer diarrhœa. Medical officers of health have always been required in their annual reports to summarize the vital statistics in their districts; and since 1905 a more detailed statement of infant mortality during each part of infancy has been required. Annually, therefore, as well as when they received the weekly returns of deaths from the local registrars, there was forced upon their attention the fact that deaths of infants under one year of age formed a high proportion of total deaths at all ages (12.9 per cent. in 1917), and that of these infantile deaths a large proportion were caused by diarrhœa, the number varying with the temperature and the deficiency of rainfall in the summer months. In 1912, a year of relatively small mortality from diarrhœa, this disease caused 8.1 percent. of all deaths under one year of age.

For many years past it has been customary for medical officers of health to issue warnings as to summer diarrhœa, to arrange for the distribution of leaflets of advice concerning the disease, and to urge the necessity of more thorough cleanliness both municipal and domestic during the summer months. Even before the early notification of births became obligatory, in many areas the addresses of infants were obtained from the registrars of births and special visits were made to the mothers of infants during the months of

June and July and especially to the mothers of those infants who were known to be artificially fed.

The reports of medical officers of health of many of the large towns from 1890 onwards show that much valuable work was being accomplished, and the way was being prepared for more general measures against infant mortality.

The importance of municipal sanitation in aiding the elimination of diarrhœal mortality is illustrated in the experience of many towns, and strikingly by the comparative experience of Leicester and Nottingham. The chief difference between the sanitary condition of the two towns was that in Nottingham in 1909 pail closets still served more than half the houses, while Leicester had abandoned this system entirely, substituting water-closets. Between 1889–93 and 1909 the diarrhœal mortality in Leicester had declined 52 per cent.; in Nottingham it had only declined 4 per cent.

Diarrhœa is not the only disease of infancy which can be greatly diminished by improved public health administration. Tuberculosis and whooping cough and measles figure largely in the infantile death returns. Over 21 per cent. of the total deaths in infancy are due to these three diseases and to diarrhœa. The amount of syphilis appearing in the death-returns is small; but its actual amount is much greater than the figures show. If pneumonia and bronchitis, which account for 19 per cent. of the deaths in infancy, be

regarded—as they should—as infective diseases, then it may be said that the problem of saving child life and securing the correlative improvement in the standard of health of children who survive to higher ages, *consists very largely in the prevention of infections,* including diarrhœal diseases and acute respiratory diseases.

It follows from this that even if the limited and erroneous view be taken that Sanitary Authorities are concerned only with the prevention of infectious diseases, the reduction of infant mortality is a duty devolving on these authorities, and cannot be effectively carried out without their coöperation. Voluntary effort must therefore always, in large measure, be directed towards stimulating local authorities to perform their duties.

The influence of diarrhœal summer mortality on the progress of child welfare work is further shown by the fact that among the earliest efforts were those to provide pure cows' milk to infants. In England official Milk Depots for this purpose were never numerous; and little voluntary effort went in this direction. There now remain very few such Milk Depots; but many local authorities provide milk, more particularly dried milk, to infants for whom it is specially prescribed at Infant Consultations. Early investigations at Brighton and elsewhere showed that the mortality of infants fed on condensed milk,—chiefly of the

sweetened variety,—was greater than that of infants fed on fresh cows' milk, and directed attention to the supreme importance of domestic cleanliness in the prevention of summer diarrhœa. The Milk Depots and the concurrent agitation for purer cows' milk served a useful purpose; though it cannot yet be said that the cows' milk ordinarily supplied in England is satisfactorily clean.

It became evident ere long that the broadcast distribution of instructions as to how cows' milk might safely be stored and prepared for infants had but a limited utility, and that the directions given were liable to be misinterpreted by mothers as an encouragement to abandon breast-feeding; and there is reason to believe that these directions did sometimes have this effect. Hence the importance of the work initiated by the late Dr. Sykes at the St. Pancras School for Mothers, which brought into relief the importance of encouraging breast-feeding by every possible means. In towns in which the aided supply of milk was continued, advice as to its use was also initiated; and thus gradually Infant Consultations, in which the main element was the giving of individual advice and treatment as required, superseded Milk Depots, and were established in very large numbers where Milk Depots had never been started. These had educational as well as medical and hygienic activities; and there need be no dispute as to the relative value of these two aspects

of the work of Infant Consultations (also known as Schools for Mothers, Child Welfare Centres, Baby Weighings, Mothers' Welcomes, etc.); for whether advice and instruction are given to the individual mother or to mothers collectively,—or as is advisable in both ways,—it should be exactly the advice which a physician skilled in the hygiene of infancy as well as in the treatment of infantile complaints would give to his individual patient. In this sense it remains true, as Professor Budin, the distinguished founder of Infant Consultations said: "An infant consultation is worth precisely as much as the presiding physician." This is true whether it is possible to arrange for a physician to be present at each meeting of a Child Welfare Centre; or whether, as has happened during the Great War in England, nurses or health visitors trained under such a physician have given hygienic advice in his absence.

The Notification of Births

For many years before the Notification of Births Act was passed, it had been customary, especially in towns, to arrange for inquiry by a sanitary inspector or female visitor into death occurring under one year of age, and in many instances for the giving of systematic advice to mothers concerning their infants. More than twenty years ago the Manchester and Salform Sanitary Association had initiated a system of

home visitation by volunteer ladies and by women workers paid by the Association who went from house to house, gave elementary sanitary advice, and reported serious defects to the Sanitary Authority. The City Council at an early stage showed its appreciation of the importance of this work by giving grants towards the expenditure incurred.

In order to enable early visits to be made, the town council of Salford had begun as early as 1899 a system of voluntary notification of births by midwives.

Prior to the stage at which early notifications of births was obtained, the medical officer of health was dependent for his information on the registration of births, for which an interval of six weeks after birth was permitted before it became compulsory. During this interval a large proportion of the total mortality of infancy had occurred,—approximately one-fifth of the total deaths in ths first year after birth occur in the first week and one-third in the first month after birth,—and the possibility of successfully influencing the mother to continue breast-feeding had gone. The action of the town of Huddersfield in 1906 in obtaining Parliamentary power to secure the compulsory notification of births within thirty-six hours of birth represented a rapid growth of opinion based on experience in that and other towns to the effect that in the absence of early information of birth the necessary sanitary precautions and counsel as to personal hy-

giene could not be given with the greatest prospect of success. This local pioneer work doubtless facilitated the passing of the Notification of Births Act in 1907.

Much important work followed the notification of births. Home visits to the mother were regarded and continue to be regarded as the most important part of this work; but there also grew up rapidly the present system of Infant Consultations and similar organizations.

The Notification of Births (Extension) Act, 1915, not only made the enforcement of this act universal, but it also empowered each local authority administering the Act to exercise any powers which a sanitary authority possesses under the Public Health Acts "for the purpose of the care of expectant mothers, nursing mothers, and young children." In drawing the attention of Local Authorities to the terms of the Act the Local Government Board, as well as earlier in the war, deprecated false economy during the war. They said:

> At a time like the present the urgent need for taking all possible steps to secure the health of mothers and children and to diminish ante-natal and post-natal infant mortality is obvious, and the Board are confident that they can rely upon local authorities making the fullest use of the powers conferred on them.

The Board in the same circular laid stress on "the importance of linking up this work with the other

medical and sanitary services provided by local authorities under the Public Health and other Acts."

The passing of this Act has been followed by an increasingly rapid development of Maternity and Child Welfare work, and the Maternity and Child Welfare Act passed in August, 1918, made it obligatory on each Council exercising powers under the Act to appoint a Maternity and Child Welfare Committee, which must include at least two women, and may include persons specially qualified by training or experience in subjects relating to health and maternity who are not members of the Council.

In the circular letter sent out to local authorities explaining the new Act, the Local Government Board reëmphasizes its previously stated views that child welfare work was second only in importance to direct war work, and was really a "measure of war emergence," and added:

> although we have enjoined as local authorities the necessity of the strictest of economy in public expenditure, we have urged increased activity in work which has for its object the preservation of infant life and health. We are glad to note that the great majority of local authorities have realized the value of continuing and extending their efforts for child welfare at the present time.

The Causes of Child Mortality

For detailed consideration of the causes of infant mortality and of mortality during the next four years

of life in England and Wales, the reader may be referred to official reports by the writer.

No consistent and continuous decline had taken place in infant mortality prior to 1900, although there had been marked reduction of the mortality in each of the next four years of life. This difference corresponds in the main with the facts that greater success had been achieved in the general measures of sanitation and in the reduction of prevalence of and mortality from such infectious diseases as scarlet fever, diphtheria, and enteric fever, than in respect of the special causes of mortality in infancy. These special causes may be placed under three headings: First, infections,—acute respiratory diseases, measles, whooping cough, syphilis, tuberculosis, and diarrhœa; second, errors of nutrition, due largely to poverty, to mismanagement, and to imperfect provision of facilities for healthy family life; and third, developmental conditions present at the birth of the infants. Under none of these headings had marked success been achieved prior to 1900, though the steady work devoted to the subject of diarrhœa had already begun to show fruit.

The statistics of infant mortality may be stated as follows:

England and Wales

Period	Deaths of Infants under 1 Year per 1,000 Births
1896–1900	156
1901–1905	138
1906–1910	117
1911	130
1912	95
1913	108
1914	105
1915	110
1916	91
1917	96
1918	97

The above are the crude rates, the infantile death-rate being stated by the usual method per 1,000 births *during the same year*. Owing to the great decline of births during the war, this method overstates the infant mortality in recent years. In a table given in the Registrar-General's annual report for 1917, this unusual source of error is corrected. When this is done, and the infantile deaths are stated "per 1,000 of population aged 0–1," the rates for the years 1912–17 inclusive in successive years became respectively

104, 117, 113, 111, 98, and 94.

In other words, there has been a steady and uninterrupted decline in the death-rate of infants during the war.

This decline has followed similar declines in preceding years, and it is to be noted that much of this decline

occurred during the period when the hygienic work effecting child-welfare was confined to general public health measures. Thus it anticipated the more direct and active measures adopted by voluntary societies and by local authorities for the prevention of infant mortality. Comparing the five year periods 1896–1900 and 1901–05, a decrease in the death-rate of 12 per cent. is seen; comparing 1901–05 with 1906–10, a decline of 15 per cent. occurred; comparing 1906–10 with the average experience of the three years 1911–13 mortality declined 5 per cent.; comparing these three years with the average experience of the five years 1914–18, during which war conditions prevailed more or less, a reduction 9 per cent. was experienced. The actual reduction during war time is greater than is indicated by these percentages, when allowance is made for the statistical error indicated above. The exceptional experience of the year 1911 illustrates one of the chief sources of error in forming conclusions on the experience of a single year. In this year the summer was excessively hot, and summer diarrhœa prevailed to an exceptional extent; and the illustration is important, as serving to remind us of the limitations of the value of statistical tests and of the fact that increase of good work tending to improve child life may be associated temporarily with increase of total infant mortality.

The Influence of School Medical Inspection

In the development of child welfare work in England important place must be given to the system of medical inspection of school children initiated in 1907. The numerous physical defects found in school children have led to the beginning of measures for remedial action, confined in some areas to measures for securing greater cleanliness and the treatment of minor skin diseases; but extending in other areas to such measures as the remedial treatment of adenoids, the cure of ringworm, the correction of errors of refraction, and the provision of dental treatment. Perhaps the chief value of the system of medical inspection of school children has been the fact that it has demonstrated the extent to which children when they first come to school are already suffering from physical disease which might have been prevented or minimized by attention in the pre-school period. The information thus accumulated has had much influence in encouraging the institution of Infant Consultations, with a view to the early discovery of disease or of tendency to disease.

The Influence of Statistical Studies

The intensive study of our national and of local vital statistics has also had a most important bearing on the further development of maternity and child welfare

work. In successive official reports it has been shown that infant mortality varies greatly in different parts of the country, irrespective of climatic conditions; that it varies greatly in different parts of the same town, in accordance with variations in respect of industrial and housing conditions, of local sanitation, of poverty and alcoholism; that the variations extend to different portions of infant life, the death-rate in infants under a week, or under a month in age, for instance, being two or three times as high in some areas as in others; and that the distribution of special diseases in infancy similarly varies greatly. Intensive studies of infant mortality on these and other lines have pointed plainly the directions in which preventive work is especially called for; and have incidentally demonstrated the fundamental value of accurate statistics of births and of deaths in the child welfare campaign. Surveys of local conditions both statistical and based on actual local observations form an indispensable preliminary to and concomitant of good child welfare work; and it is to combined work on these lines that the improvement of recent years is largely attributable. To *act helpfully* we must *know thoroughly* the summation of conditions which form the evil to be attacked.

One important result of investigations such as those already mentioned has been to bring more clearly into relief the fact, which previously had been partially

neglected, that *child welfare work can only succeed in so far as the welfare of the mother is also maintained.*

This may imply extensions of work involving serious economic considerations; but apart from such possibilities and apart from questions of housing, and of provision of additional domestic facilities for assisting the overworked mother, there is ample evidence that medical and hygienic measures by themselves can do much to relieve the excessive strain on the mother which childbearing under present conditions often involves.

The Course of Mortality from Childbearing

The general course of mortality from childbearing (including deaths ascribable to pregnancy) in England and Wales is shown by the following table:

Average Annual Death-rates per 100,000 births from

	Puerperal Septic Diseases	Other Diseases of Pregnancy and Childbirth
5 years, 1902–06	185	228
5 years, 1907–11	152	215
3 years, 1912–14	148	233
2 years, 1915–16	151	239

It will be noted that although there has been a marked decline of deaths from puerperal sepsis, the death-rate from other complications of childbearing has not declined. The decline in puerperal sepsis is

general throughout the country, and evidences the greater care in midwifery both on the part of doctors and of midwives. The administration of the Midwives Act, 1902, has doubtless done much to secure this. The death-rate from conditions other than puerperal fever continues to differ greatly throughout the country. It is highest in Welsh counties, Westmoreland, Lancashire and Cheshire coming next in order of unfavourable portion; in many industrial, including textile, towns it is also excessive. The general conclusion reached by the writer in an elaborate official report on the subject is that "the quality and availability of skilled assistance before, during, and after childbirth are probably the most important factors in determining the remarkable and serious differences in respect of mortality from childbearing shown in the report."—"The differences are caused in the main by differences in availability of skilled assistance when needed in pregnancy, and at and after childbirth."

The Midwives Act, 1902

This Act forbade any woman after April 1, 1906, who was not certified under the Act, from using the title of midwife or any similar description of herself. It forbade after April 1, 1910, any such woman from "habitually and for gain attending women in childbirth, except under the direction of a qualified medical practitioner"; and it forbade any certified midwife to

use an uncertified person as her substitute. The Act defined the limits of function of the midwife by stating that the Act did not confer upon her any title to give certificates of death or of still-birth, or to take charge of any abnormality or disease in connection with parturition.

The Act set up the Central Midwives Board, giving it special disciplinary powers over midwives. It also imposed on county councils and the councils of county boroughs the duty of supervising the work of midwives. For further details the Act itself and the Rules of the Central Midwives Board made under the Act should be consulted.

The Midwives Act, 1918, gave further powers to the Central Midwives Board and to local supervising authorities, and made it the duty of the latter to pay the fee of a doctor called in by a midwife in any of the emergencies for which Rules are made by the Central Midwives Board, the fee paid to be in accordance with a scale prescribed by the Ministry of Health.

As at least three-fourths of the total births in England and Wales are attended by midwives with or without the assistance of doctors, their work has great importance in relation to the reduction of maternal disablement and mortality and to the prevention of early infant mortality, and it is of happy augury that they are being enlisted more and more in official work for safeguarding the health of the mother and her un-

born or recently delivered infant. An important recent addition has been made to the rules of the Central Midwives Board, which makes it obligatory on the midwife to notify to the medical officer of health any instance, while the patient is under her charge, in which for any reason breast-feeding has been discontinued.

Administrative Work.—Largely through the machinery provided by the Midwives Act and the Notification of Births Act a system of supervision of maternity and child welfare has been organized in every county and county borough, and this has been responsible for a large share of the improvement experienced in recent years. The character and extent of development of the work varies greatly in different centres; and as a rule the work is more fully developed in county boroughs than in counties. In county districts it has sometimes been found necessary to unite the offices of assistant inspector of midwives, infant visitor and tuberculosis visitor in one adequately trained health visitor, thus saving time in travelling by enabling the visitor to have a smaller district allotted to her than if she undertook only one branch of work. In some counties the school nurse's work is also undertaken by the health visitor. In some country areas arrangements have been made for infant visiting to be carried out by district nurses who are also midwives.

Voluntary Workers.—Much of the success so far achieved in improving the health conditions of in-

fancy and childhood has been secured by coöperation between voluntary and official health visitors. Excellent work has been done by local and other societies, particularly during the last ten years, in educating public opinion and in direct assistance to mothers and their infants. It is essential that such voluntary work should have a nucleus of highly trained and well-paid workers; but given this condition, a large amount of good work can be accomplished by voluntary aid.

The main work has been that of the *health visitor*. The details of this work, the conditions of qualification of workers, the number of visits which it is desirable to make, the character of the advice intended to be given at these visits are set out in an official memorandum of the Medical Officer of the Local Government Board and it is unnecessary to repeat this information in these pages.

A similar remark applies to the next most important development of work, the institution of *Maternity and Child Welfare Centres*. The conditions of work of these institutions are set out in the same document.

Training and Provision of Midwives

The provision of additional trained midwives is a pressing problem. The increased cost of living, longer training required, and the rapid development of less laborious and more lucrative occupations, have made it difficult to secure women to train as midwives, or to

continue to practise in this capacity after qualification. In many industrial areas the older *bonâ fide* midwife is preferred, although it is the almost universal experience that the trained midwife more quickly detects conditions endangering the life of the mother or infant, and sends for medical help. In order to encourage further the supply of practising midwives, the government gives grants for increased remuneration to midwives newly appointed by local authorities, sufficient to recoup them in the course of a few years' service for the cost of their training.

At a recent date, of some 30,543 trained midwives on the Roll, only 6,754 were returned as being in actual practice as such.

In order to make midwives available for all women needing them, the Board repays to local authorities and voluntary associations half the cost of the provision of a midwife for necessitous women. During the Great War a woman might receive assistance in her confinement from several central sources; for in addition to the above

(1) If she was the wife of an insured person, or if she herself is insured, she received under the conditions of the National (Health) Insurance Act 30s in cash, or if she is insured and the wife of an insured person 60s. in cash.

(2) If she was the wife of a soldier or sailor and not entitled to maternity benefit she received from

10s. per week up to £2 from the Local Pensions Committee.

(3) If she was a munition worker she might be aided under a scheme provided under the Ministry of Munitions.

(4) She also might obtain priority for the supply of milk, or obtain free milk or milk at cost price under the Local Committee Board Food Control Order, No. 1, 1918, empowering local authorities to supply milk and food and an extra ration under the Food Controller's Order. In addition, after confinement she had available the ration apportioned to the infant and its allowance of milk under the priority scheme.

There was evidently need for simplification and unification of effort in the above cases.

In many instances maternity nursing is required. The midwife may have too many patients to be able to give this during the ten days in which she is in charge of the patient; and even when she carries out her duty in this respect in accordance with the Rules of the Central Midwives Board additional help is required in the feeding and care of the mother and infant, and in the care of the household. Often also nursing is required for both mother and infant for a considerable period beyond the ten days. For these persons the government gives grants for maternity nursing and for "home helps."

Even when all the above requirements are or can be fulfilled, there remain a large number of cases of pregnant women, and especially of unmarried women, who cannot be satisfactorily confined at home, either because of their social or sanitary circumstances, or because abnormal or complicated childbirth is expected. For such cases hospital provision is needed. This is one of the most urgent requirements of the present time.

Under present conditions, institutional lying-in provision is chiefly voluntary in character; and the government has advised local authorities to contract for its use, rather than wait for the erection of special hospitals. In other instances houses are being taken and adapted as maternity homes.

Ante-natal Work

The progress made in the organisation of ante-natal work is slow for reasons which are fairly obvious. There has been difficulty under war conditions in securing assistance from doctors and midwives. There is the well-known difficulty as to notification of pregnancy, which the government has not encouraged, except when the definite consent of the mother has been previously obtained. The facilities for help provided at the Centre have in some areas attracted patients; and health visitors and midwives have done much in other areas to persuade mothers of the advisability of

safeguarding themselves against possible complications, as well as of securing adequate preparation for the lying-in period.

This subject is closely associated with that of abortions, stillbirths, and deaths in the first two weeks after birth. One of the most promising methods for securing the sound development of ante-natal work consists in the investigation of stillbirths and early infant mortality. When these inquiries are made mothers can be induced to obtain medical advice not only at the time, but also in the event of a subsequent pregnancy. The investigation at the patient's home of all such cases and assistance in prevention of recurrence of unnecessary ante-natal, natal, and early post-natal deaths have as great an importance as the building up of a successful ante-natal clinic. The anti-syphilis work now being carried on will help greatly in this direction.

Dental Assistance

There has been a large extension of dental assistance at Centres for expectant and for nursing mothers, and for children, especially in the metropolis and its vicinity. The government has lately extended its grant to cover dentures for mothers who are nursing or pregnant, if the medical officer of the Centre is satisfied that the woman's health will be materially improved by the denture, and that she is unable to provide it for herself.

Creches

Creches and day nurseries may be expected to exercise influence in educating mothers in the care of their children. For this purpose it is very desirable to have the creche attached to or near an infant welfare centre.

These creches, unless managed with the most rigid medical and general cleanliness, are very apt to spread infectious diseases; not merely such diseases as whooping cough, measles, and chickenpox, but also catarrhal and diarrhœal diseases. In the prevention of all of these the enforcement of the strictest cleanliness is essential, especially during the summer months for the last named diseases. For the prevention of catarrhal infections, it is essential that the creche should be conducted, so far as practicable, on strict open-air lines. Open-air creches give admirable occasional relief to mothers, even when these do not go out to work. The "toddler's playground" is a blessing to all concerned, but the indoor creche may be, and often is, mischievous. The risks are greatly reduced by insisting on open-air conditions and by not allowing large groups of children to come together. Smaller groups mean greatly decreased possibility of cross-infection.

Observation Beds at Child Welfare Centres

At infant welfare centres infants are not infrequently seen who fail to make progress while living at home, and who yet are not ill enough to be sent to a

hospital. This especially applies to cases of defective nutrition. For these cases beds in connection with centres have been found to be necessary for observation purposes and to initiate further treatment. In some instances, especially for failure of breast-feeding, it is advisable to admit the mother with the infant.

On July 30, 1914, the Local Government Board sent a circular letter and a covering memorandum by their Medical Officer which may be claimed to have been the starting point of maternity and child welfare work on a larger scale, more generally distributed throughout the country, and more completely covering the whole sphere of medical and hygienic work for this purpose than had previously been envisaged. Although the country at that time might be said to be already under the shadow of war, these documents had been previously prepared, and their appearance four days before the declaration of war was a coincidence. The chief burden of the additional work to which local authorities were urged was that there should be *continuity in dealing with the whole period from before birth until the time when the child is entered upon a school register;* and the memorandum contemplated that "medical advice and, where necessary, treatment should be continuously and systematically available for expectant mothers and for children till they are entered on a school register, and that arrangements should be made for home visitation throughout this

period." It was added that "the work of home visitation is one to which the Board attach very great importance and in promoting schemes laid down in the accompanying memorandum the first step should be the appointment of an adequate staff of health visitors."

The main provisions of this memorandum are printed on page 135.

The increase of work since that date may be gathered from the following table, which shows the increase each year in the number of health visitors, of child welfare centres, and of grants given on the 50 per cent. basis by the Local Government Board and the Board of Education.

Amounts of Grants (pounds sterling) in Each Financial Year to Local Authorities and Voluntary Agencies, on the Basis of 50 Per Cent. of Total Approved Local Expenditure

Financial Year	Local Government Board	Board of Education
1914–15	11,488	10,830
1915–16	41,466	15,334
1916–17	67,961	19,023
1917–18	122,285	24,110
1918–19 (estimated)	209,000	44,000

These grants do not cover the entire scope of child welfare work carried out throughout the country, and their amount must not be taken as a complete indication of the extent of this work.

The increase during the war period has been very

great; and this can be attributed to the desire to do everything practicable for mothers and children, especially those belonging to soldiers and sailors who were risking their lives for the country; and to the increased realisation of the importance of preserving and improving our chief national asset which consists in a healthy population. During this period there was a great increase in the industrial employment of women, including married women, in factories including munition and other works. This increase it is believed amounted to a million and a half workers.

Notwithstanding the many adverse influences, to which must be added great overcrowding in many industrial areas, especially those in which new industries were hurriedly started, and the increasing cost of food and especially of milk with a scarcity of supply, it has been seen that infant mortality remained low and on the whole declined during the whole period of the war.

To what circumstances can this be ascribed?

It is unnecessary to assume that this result was entirely due to the active measures favorable to maternity and child welfare which were taken as an unexampled scale, though these measures can claim an important share in the result.

A number of contributory factors were at work:

1. In none of the years in question did the summer weather favor an excess of diarrhœal mortality. With this factor, however, eliminated the infant mortality each year was lower than in previous years.

2. Although so many husbands were away from home, in a large proportion of cases the wife, in virtue of her separation allowance, was financially in a more favorable position than when she was dependent on her husband's wages or such portion of it as he allowed her for the support of the household.

3. In addition, every soldier became an insured person, and his wife was therefore entitled to the Maternity Benefit of 30 shillings on the birth of a child, and an additional 30 shillings if she was herself an employed person.

4. There can be no reasonable doubt that the restrictions on the consumption of alcoholic drinks and the limitation of hours for opening public houses were a factor in improving domestic welfare.

But attaching full value to these and other similar factors which undoubtedly were at work, chief place must, I think, be given to the awakening of the public conscience on the subject, and to the concentration on the mother and her child which had been urged in season and which now became a fact. An indication of the public mind is given by the advice issued by the Local Government Board in August, 1918, which is quoted on page 248.

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